AIA JOURNAL

MARCH 1969

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ART DIRECTOR
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BUSINESS MANAGER
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BPA

VOL. LI, NO. 3

Cover: Boston looks up to newly esteemed harbor site

Introducing the Sundberg Chair– a graceful design of cast nylon

This is the Sundberg Chair—designed for American Seating by Carl Sundberg of Sundberg-Ferár, noted design consultants. The planned simplicity of this chair lets it quietly blend into any modern architectural decor. It achieves design flow throughout an entire installation through the use of the shell on fixed lecture room furniture, movable classroom units, and a stackable chair that goes anywhere.

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Asides

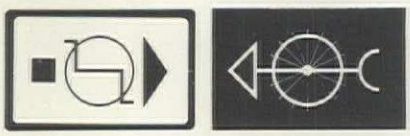
Next Month: The term "second home" is becoming a household word of sorts in the United States; in fact, economists predict that between 200,000 and 250,000 such houses will be built each year for the next 10 years.

Today's second home is no longer a mere rustic mountain cabin or a casual seaside retreat, as our readers will note in viewing a portfolio of examples from around the land. And they offer a particularly good opportunity for architectural services, ranging from imaginative, single residences to large-scale developments and condominium projects.

Also in April: a primer for architects describing the terms and concepts that have developed in planning capital investments.

Symbolic Confusion: The *Wall Street Journal* in its December 4 edition pointed out that the chaos of newly conceived symbols is creating "another Tower of Babel." To which one of our contributors this month says "Amen."

In talking with Peter Lassen of the Paralyzed Veterans of Amer-



ica (see the leadoff presentation), we learned that the symbols used to indicate facilities for the handicapped vary all over the lot—and all over the world.

Lassen, who is serving as a kind of clearinghouse on the subject, welcomes graphic contributions which can be sent him at 3636 16th St., N.W., Washington, D.C. 20010. A symbol, he says, should be simple, easily understood and esthetically pleasing. The one created by the National Building Code of Canada is the most widely used, he believes. One of the best designed, in Lassen's view, is the symbol developed by the New York State Council of Parks and Outdoor Recreation for its brochure "Outdoor Recreation for the Physically Handicapped." R.E.K.

PHOTO & ART CREDITS: 17 — T. Mike Fletcher; 40, 42, 43 — Ron Jones; 53, above — David Hirsch; 54 — Davis Dunlop; 55, right, 57, 58, 59, 60 — Jack E. Boucher, courtesy Library of Congress; 62 — George M. Cushing; 63 — Northeast Aerial Photos, Inc.

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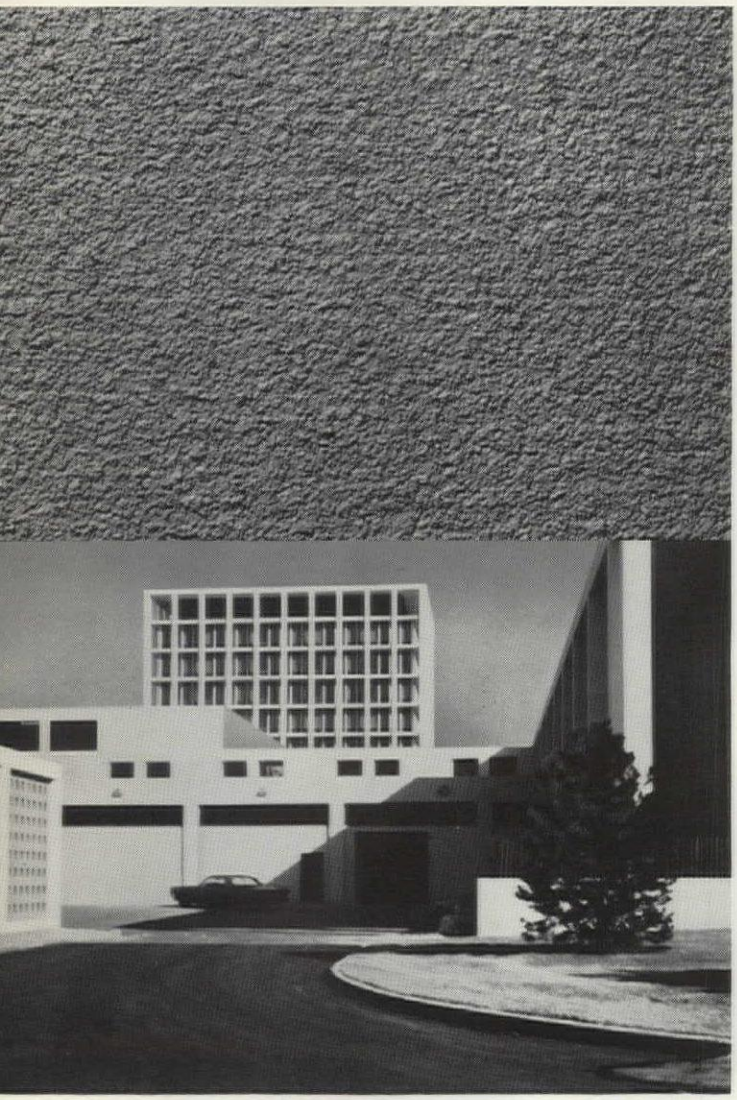
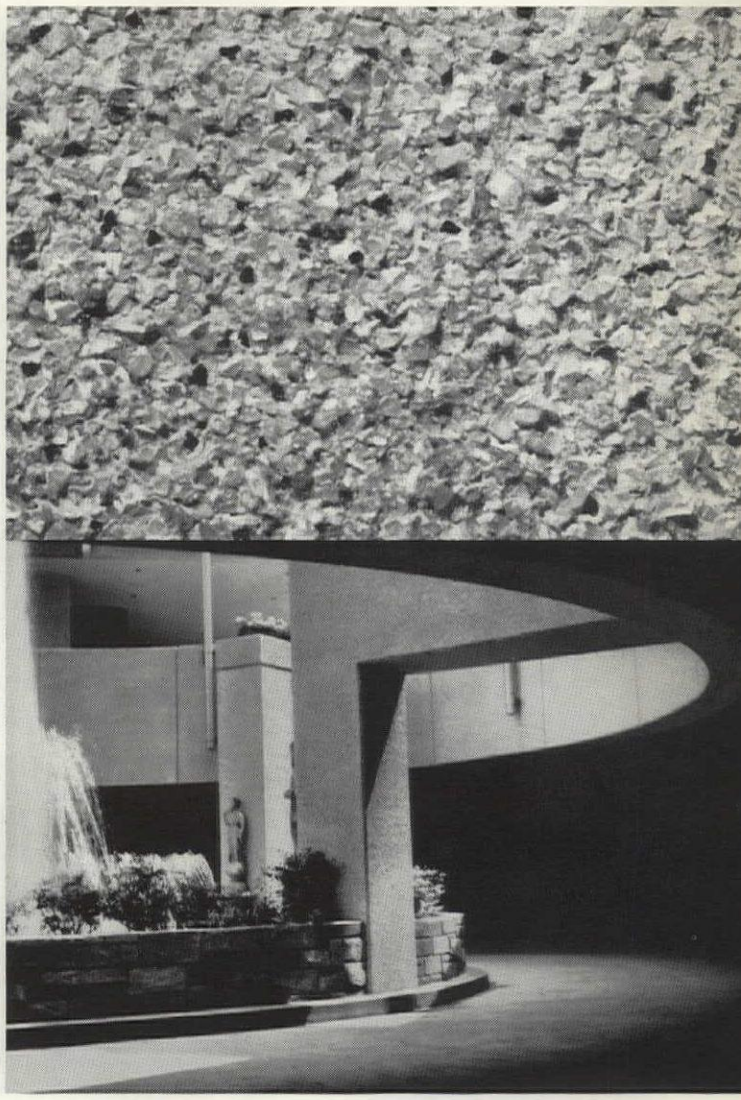


Application: Bostik Textured II on concrete block and poured concrete columns and beams.
Owner: All-State Insurance Company, Northbrook, Illinois
Architect: Schmidt, Garden & Erikson, Chicago, Illinois
Applicator: Bobbe & Co., Inc., Chicago, Illinois



Application: Featurestone on cast in-place concrete.

Owner: Chalk House, Washington, D. C.
Architect: Morris Lapidus Assoc., Miami Beach, Florida
Applicator: Edward W. Minte Company, Washington, D. C.

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Newslines

Total of 10 to Receive AIA Medals, Citations, At Convention in Chicago

Ten persons and organizations will receive awards from The American Institute of Architects at its June 22-26 convention in Chicago.

They include besides William Wilson Wurster, FAIA, whose selection for the Institute's Gold Medal was previously made known, two more architects, an architectural firm, a sculptor, a tapestry designer, a state agency, an engineer, an architectural photographer and an architectural critic.

The office of A. Quincy Jones, FAIA, and Frederick E. Emmons, AIA, Los Angeles, will receive the **Architectural Firm Award** which is bestowed when "continuing collaboration among individuals of the firm has been the principal force in consistently producing distinguished architecture."

Jones and Emmons

An Institute statement said the firm has so performed in both "large and small architecture, with particular emphasis on regional architectural characteristics."

The **Fine Arts Medal** will go to Jacques Lipchitz of Hastings-on-Hudson, N. Y. The internationally known sculptor's work, the AIA said, "exemplifies the powerful, explicit, imaginative expression of form in time and space" and is "often symbolic and sometimes awe-inspiring" in sharing its structural elements with architecture.

Lipchitz

Easterwood

The **Craftsmanship Medal** will go to Henry Easterwood, Memphis, Tenn. The Medal recognizes "distinguished creative design and execution, where design and hand craftsmanship are inseparable."

Easterwood is a tapestry designer — and has been chairman of the textile department of the Memphis Academy of Arts since 1959.

Philip J. Meathe, FAIA, formerly president of Meathe, Kessler & Associates, Detroit, and now executive vice president of Smith, Hinchman & Grylls Associates, Inc., also of Detroit, will receive the **Edward C. Kemper Award** which cites an AIA member who has "contributed significantly to the Institute and to the profession."

Meathe

Skilling

Meathe has served as president of the Detroit Chapter AIA and as chairman of the Detroit Joint Construction Industry Committee. He was a member of the Mayor's Committee on a City Hall Site and in 1965 was named vice chairman of Detroit's Metropolitan Bid Registry Committee. That same year he was elected director for the Michigan Region AIA and later became chairman of the AIA Public Relations Committee.

The **Allied Professions Medal** will go to John B. Skilling, principal-president of Skilling, Helle, Christiansen, Robertson, consulting structural and civil engineers of Seattle and New York.

Said the Institute in connection with Skilling's election: "Contemporary architecture today is more closely related to its structural and mechanical systems than ever before. John Skilling, structural engineer, is particularly aware of the relationship now growing in importance between architects and their consultants."

Chosen for the **Architectural Photography Medal** was Julius Shulman of Los Angeles.

Shulman

Koch

In naming Shulman the Institute said: "This talented photographer's thorough knowledge of architecture has contributed, over a period of many years, to the development of architectural photography of the highest caliber."

Carl Koch, FAIA, of Boston, will receive the **Industrial Arts Medal,** in citation of his work over many years "to incorporate prefabricated building materials into his designs with variety and imagination. He has worked closely with corporate clients, endeavoring to meet the needs of society . . ."

The **Citation of an Organization** will go to the State University Construction Fund which has responsibility for the physical facilities of the 29 campuses of the State University of New York. The Fund, directed by Dr. Anthony G. Adinolfi, is being honored for having "judiciously selected from the finest architectural talent in the United States the architects to design and develop the campuses of the State University of New York."

Huxtable

Adinolfi

The **Architectural Critic's Medal** will be presented to the *New York Times'* architecture critic, Ada Louise Huxtable. The award was established last year to "stimulate, broaden and improve the quality of architectural criticism in order to increase the public's visual perception in environmental design."

Mrs. Huxtable is being cited for "a distinguished career devoted to architectural criticism."

Continued on page 12

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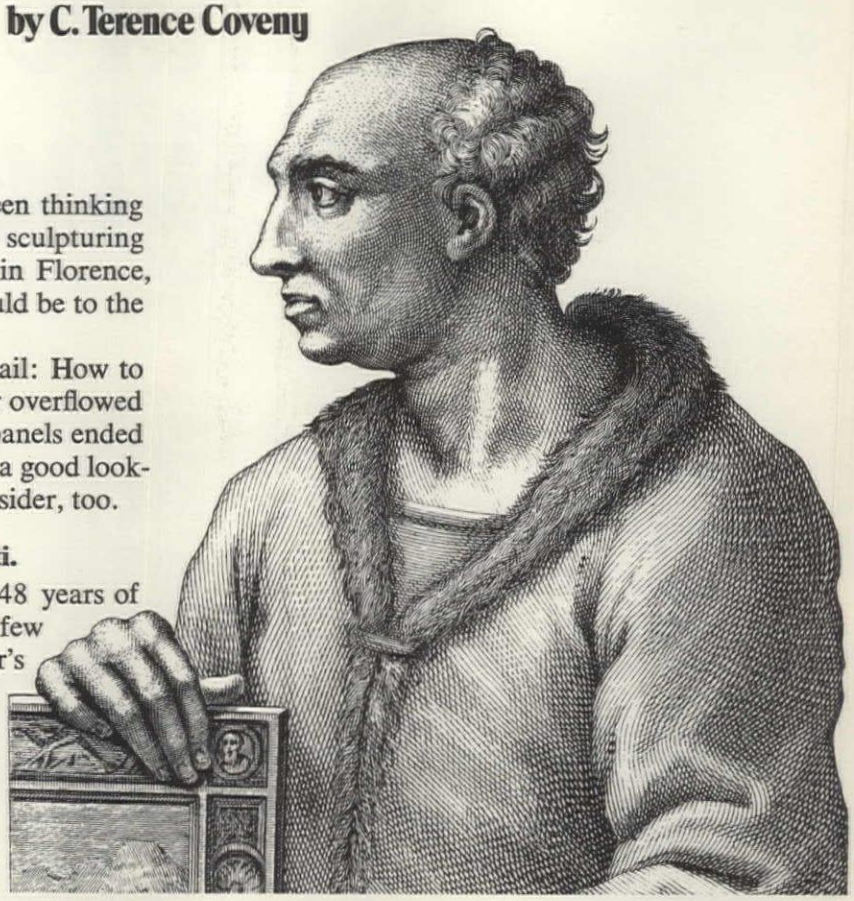
RUSSWIN®

A door isn't just something to open

by C. Terence Coveny



Lorenzo Ghiberti must certainly have been thinking along these lines as he spent 48 years sculpturing Biblical scenes on the Baptistery doors in Florence, Italy. He knew how important a door could be to the looks of a building.

But Ghiberti forgot just one small detail: How to make it floodproof. When the Arno River overflowed its banks two years ago, Ghiberti's door panels ended up all over the city. Sure it's great to have a good looking door, but there are other things to consider, too.

How to be a modern day Ghiberti.

You might not be willing to give a door 48 years of your life, but you'd be surprised what a few minutes can get you these days. Take a door's looks. What most expresses the kind of structure you're designing now? Hardwood veneer? Use of color in an overlay? Plastic laminate? Today, any of these surfaces and a variety of wet or dry finishes, both clear and pigmented, are available from Weldwood.

Weldwood® doors are manufactured to your specifications. Perhaps you want a special opening, a special color, a special design, or a special face to match architectural woodwork. Maybe you want a door to blend in. Maybe you want a door to stand out. Weldwood can even make you a door that doesn't look like a door. But no matter what kind of door you want, make it a good one.

Is that really a door you're filling that hole in the wall with?

According to Webster a door is a barrier. Actually, that isn't always true. Noise gets through them, as do fires, X-rays, things that cause heavy sudden impacts ...even the Arno River. That's why it's wise not to accept any door on its face value.

And you won't have to when you get the inside story of how Weldwood goes about putting a door together. Behind every one of our faces is a well constructed thought.

Take a Weldwood fire door. It's made light in weight with an incombustible Weldrok® core which will never warp or twist for the life of the installation. There's little maintenance and it's competitively priced. Weldwood fire doors are tested, UL labeled, and fully supported by U.S. Plywood. And the same thought goes into other Weldwood doors, too—acoustical, static-shielding, lead-lined, heavy-duty....

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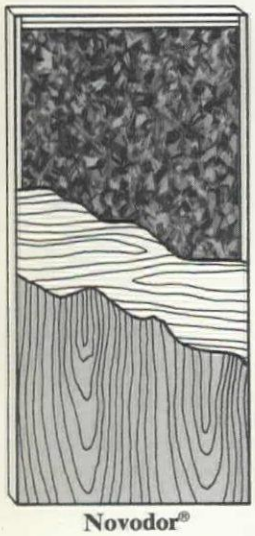

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Staved Lumber Core. Hardwood-faced all-purpose interior/exterior door.

Stile and Rail Core. Exterior/...interior hardwood-faced door...closely conforms to Federal Specification LLD-D-581, Type 1, Style 11.

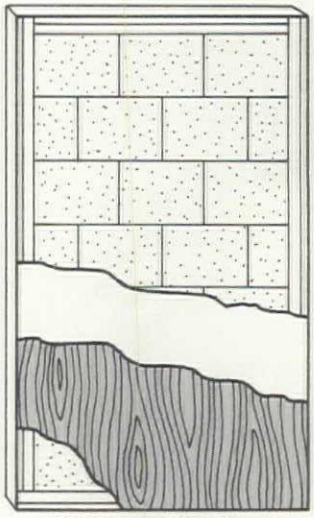
Hollow Core

SPECIAL PURPOSE DOOR CONSTRUCTIONS

Static-Shielding. The 9-ply construction, with either staved lumber, Novoply or Weldrok core, incorporates a copper screen which transfers static electricity to hinges and frames.

Lead-Lined. The lead-lined door, with staved lumber, or Weldrok (mineral) core, provides a handsome appearance and maximum protection.

Static-Shield Doors



1½-Hour Fire Door

Heavy Duty. Rigid PVC door edging, maple dieboard reinforcing stiles, and plastic or metal kick and stretcher plates greatly increase the durability and appearance of doors subjected to continual impact and abrasion.

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Acoustical. 1¾" and 2½" thick, hardwood-faced flush doors to fit all standard sizes. Tested as operating units for uniform performance.

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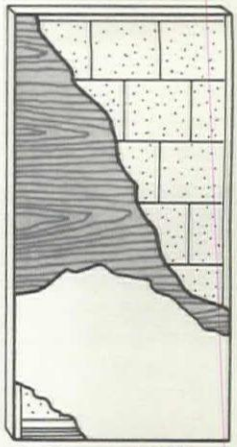

¾-Hour and 1-Hour Fire Door

U.S. Plywood

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Newslines *from page 12*

In another action the board urged Congress to consider "appropriate other means to encourage a higher tax treatment" of pension funds or percentage of investment in residential mortgages. Pension funds, it said, represent one of the fastest growing forms of consumer savings, but to an increasing degree are invested in equities.

Clarke's Last Stand: Eugene A. Gulledge of Greensboro, N.C., was named NAHB president, succeeding Lloyd C. Clarke of Des Moines who, at 39, was the youngest ever to head the 51,000-member organization.

Clarke said the nation's housing industry will have to produce 2.75 million homes by 1971 "or the country is in real serious trouble."

Sparkman, who is chairman of the Senate Committee on Banking and Currency, predicted that about 300,000 low-cost housing units will be built this year under Section 235 of the 1968 Housing Act. He noted that the private sector "certainly hasn't been doing all it can to house the poor, but we haven't asked it to. I think the response will be satisfactory once we learn how to bring the private sector in."

Delay in Building Costly, Especially to Hospitals' 'Race with Catastrophe'

A one-year delay in the construction of a $15-million hospital can add $1.2 million to the price of the building in high cost areas of New York State where building costs are rising at an 8 percent rate.

That estimate was made by Milton Musicus, executive director of the New York State Health and Mental Hygiene Facilities Improvement Corp., before a special conference on health facilities of the New York Chapter AIA.

A year's delay, Musicus pointed out, would also add $72,000 yearly in debt service, assuming 30-year bonds to finance the project, or a total financing cost of $2.2 million.

He said that delay is "a more expensive element in a building than any walls of marble, irregularity of building shape or excessive glazing," and added:

"We view the health needs of this state as a race with a growing inadequacy of facilities, increasing obsolescence and rising costs. It is a race with catastrophe in which the stakes are human lives."

The New York agency has organized an Office of Construction Management to oversee the operations of construction companies which manage its larger building projects. The agency operates under a statutory requirement that it award four prime construction contracts on each job, one for general construction, electrical, plumbing and heating / ventilating / airconditioning. The construction managers provide coordination among the four prime contractors.

Consultant Wins Award For Powell Hall Lighting

Powell Symphony Hall, first home of the St. Louis Symphony Orchestra, which opened over a year ago to nationwide bravos for its rehabilitation, acoustics, art and economics, has received still another accolade.

The Edwin F. Guth Memorial Award, the "Oscar" of the Illuminating Engineering Society, has gone to David A. Mintz.

Powell Hall has two systems of incandescent lighting. Decorative and architectural illumination are integrated but separately controlled by dimmers. Old chandeliers are recrystaled and their light reinforced with concealed lighting.

The St. Louis orchestra purchased the 1925 vintage Rapp & Rapp-designed movie house for less than $400,000 and, in 15 months, the architectural firm of Wedemeyer, Cernik, Corrubia, Inc., had it converted for its owner to the tune of $2 million.

Violinist Isaac Stern praised the hall as one of the three best in the

An evening of glitter in St. Louis' rehabilitated Powell Symphony Hall.

nation (other Stern choices: Carnegie Hall in New York, Symphony Hall in Boston).

The 35-year-old Mintz, who formed his own firm in New York City four years ago, describes the lighting consultant as one who fills the gap between the architect and the engineer, who understands the physical aspects of the job and cost requirements and, at the same time, is aware of texture and color and the ways in which lighting can be put to several uses.

There is no place to get a degree in architectural lighting, according to Mintz, who stresses that experience is the only teacher.

Dallas Architects Take Hard Look at Schools; Work on Other Fronts

Noting "a singular lack of creativity and innovation" in local school design, the Dallas Chapter AIA in a 42-page report declares that true economy "is a matter of value received for cost."

The report, done as a public service and representing more than 400 man-hours, states in a preface to a series of recommendations:

"School costs must be carefully qualified before realistic comparisons can be made. So-called unit costs and per-pupil costs do not reflect the quality of efficiency of a building. A school district pays every four years the equivalent of the initial cost of a school building to operate the educational program in that building.

"Therefore, it is important if full value is to be realized for schools to be well-located, flexible in arrangement and construction, adequately equipped, efficiently planned with low maintenance characteristics and comfortable environment."

The study, almost a year in preparation and headed by Donald E. Jarvis, was in answer to a request from the school board which came at a time when a new school superintendent was about to be appointed, a longtime contract with the schools' consulting architect was about to expire and Dallas schools generally concerned with excellence in education.

Total Commitment: In other areas, too, the AIA chapter has been actively engaged in enhancing the public's awareness of good design and its importance to Dallas' environment and way of life.

The chapter presented to the mayor in 1967 its "Designs for Dallas," a series of planning ideas to make the city more beautiful and vital (see "Shaping a City's Future," AIAJ, Nov. '68).

But No Architectural School: Then last fall, at its second biennial awards banquet attended by city

Continued on page 19

Bright idea

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Newslines *from page 17*

officials, business and educational leaders, the then chapter president made a plea for establishment of an architectural school in Dallas.

"We are now the largest city in the nation without such a facility," declared David R. Braden. "If Dallas wishes to include good architecture among its assets and work toward that goal, it must make a conscientious effort to strengthen and accommodate this profession. A school of architecture connected with one of our universities would do much to stimulate the good design and planning of Dallas itself."

Engineers Set Up Center For Continuing Ed Info

To provide information on continuing education opportunities, the Engineers Joint Council has established a Learning Resources Information Center.

Its main product will be a thrice-yearly directory, "Learning Resources," a compilation of data on courses, seminars, conferences, etc., indexed by subject, date and location, and available by subscription.

Other functions of the center, which is partially funded by a $40,000 contract with the US Department of Commerce's Office of State Technical Services, will be to identify and include data about correspondence courses, programmed learning materials, films and video tapes and to provide a selective alerting service on specific subjects.

Udall's New Firm Merges Designers, Politicians

An international consulting firm which will work for government and industries to create a better environment for man both here and abroad has been formed under the name Overview Group, with Stewart L. Udall as chairman of the board.

Just eight days after leaving his post as Secretary of the Interior, Udall told a press conference that this "may prove to be the most exciting day of my life" and that he expected "no compression period."

Overview will bring together such team members as planners, architects, engineers, sociologists, economists and politicians within

Continued on page 22

American Architecture Since 1780:
A Guide to the Styles
by Marcus Whiffen
The author has designed this guide not for the experienced architect but for the man in the street, for what he calls the "building watcher," as an aid to his experiencing architecture. It is concerned entirely with the visual characteristics of the various styles as they can be seen from the outside — as the "man in the street" sees them. From this point of view, plans and interiors are inappropriate to the book's aim, which is to serve as a guide to architectural styles, not as a history of criticism of them. If the book inspires the building watcher to cross the threshold into a deeper understanding of the buildings and their stylistic features, into an inside-out knowledge of architecture, then so much the better.

Each style is illustrated with several photographs (there are almost 200 in all), so juxtaposed in parallel or in series — that is, meant to be seen simultaneously or in sequence — that each group informs visually to best advantage.
$6.95

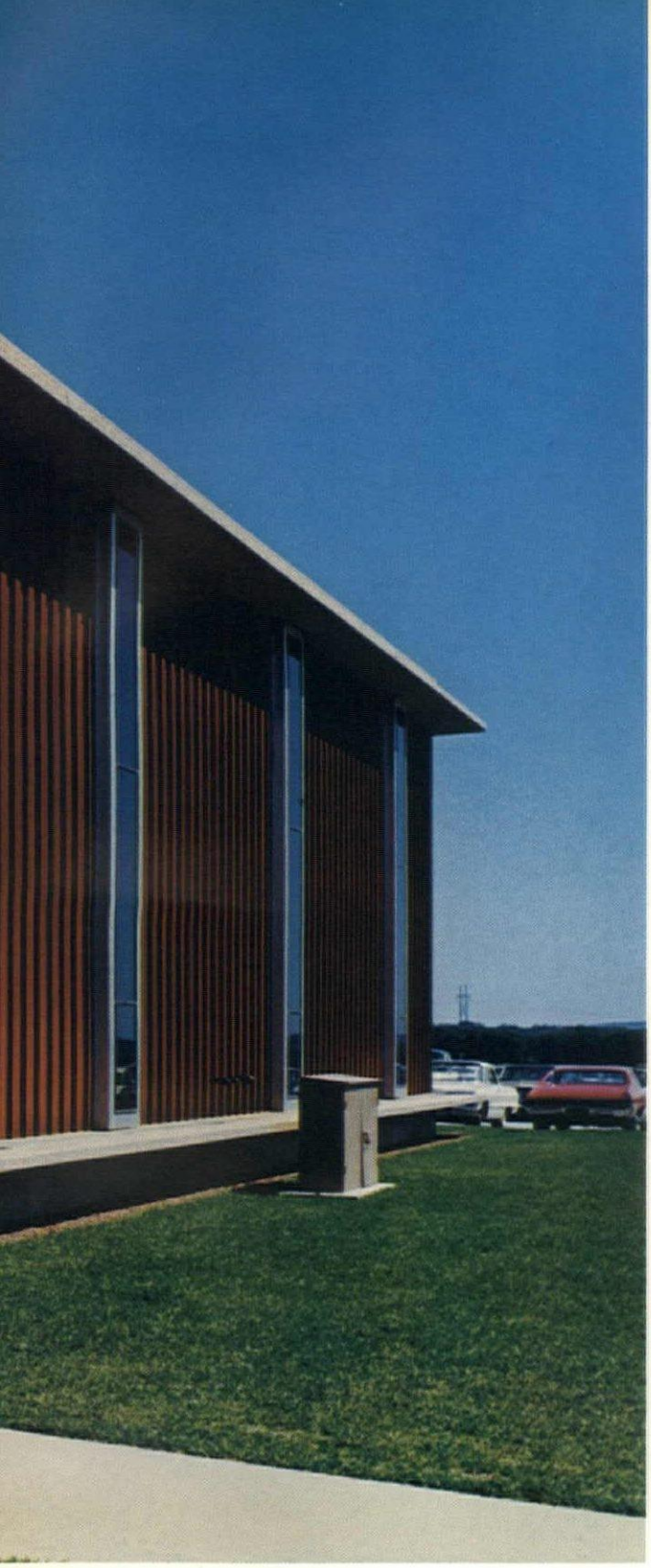
Guide to Cambridge Architecture:
Ten Walking Tours
by Robert Bell Rettig
Covering essentially the whole city of Cambridge, Massachusetts, in a series of ten neighborhood tours, this book describes hundreds of buildings of all sorts, institutional, commercial, residential. Each building is illustrated with a small photograph; the date of construction and the name of the architect, when known, are given, together with a succinct comment by the author on each building, clarifying architectural and historical points and offering evaluations. The format of the book is such that it works to its best advantage when used as an actual portable guide, but it serves as well as a guidebook with which readers not in Cambridge can take informative imaginary walks.
$8.95 paperback, **$2.95**

Tensile Structures
Volume II
by Frei Otto
The subject of nonrigid architectural structures, begun with a discussion of pneumatic structures in Volume I, is here continued with a detailed investigation of structures under tensile loads: cables, nets, membranes, etc. Stresses and forces are analyzed in detail, as are supporting structures. Suspension bridges and tents are the most commonly known examples of structures under tensile stress, as distinguished from rigid architectural forms, which are under compressive stress. Such structures have the advantages of mobility, light weight, ease and speed of erection and low cost.
$12.50
(Volume 1 available at **$22.50**)

The MIT Press
Cambridge, Massachusetts 02142

The IBM manufacturing, engineering, and office building in Austin, Texas, was designed by Page, Southerland, Page, architects. Steel fabricator: Alamo Steel and Machine Works; engineer and builder: H. F. Campbell Company. Mayari R siding by R. C. Mahon Co.

The gutter with drain holes built below the Weathering Steel siding is a straightforward and attractive solution to the staining often associated with Weathering Steel.



Weathering Steel wraps IBM Building in natural, protective coating

This one-story manufacturing and office building built for IBM in Austin, Texas, combines the use of Weathering Steel (Bethlehem Mayari R) with precast concrete having exposed aggregate. This type of construction offers a truly distinctive alternative to conventional masonry for industrial buildings. The Weathering Steel is insulated on the interior, and there is virtually no maintenance on the outside. Weathering Steel ages into a rich, deep-brown oxide coating, closely grained, acting as a barrier to oxygen and moisture. The light red-brown color shown in these photographs is typical for Mayari R after approximately six months of weathering.

The building was hardly completed before additions were being made. The first phase of 200,000 sq ft is now being augmented with a 100,000 sq ft addition, and a new wing of 150,000 sq ft is under construction. The entire building will feature a Weathering Steel exterior. Because the building is steel-framed, there is flexibility in making these additions; simply remove the exterior and add on. And the contractor reports that the speed of steel erection lets him stay well ahead of schedule.

Our new booklet discusses Weathering Steel in detail, both as to its design potentials and its properties. Write for your copy . . . Bethlehem Steel Corporation, Bethlehem, PA 18016 . . . or get in touch with the nearest Bethlehem sales office.

BETHLEHEM STEEL

Steel-framed structures are easily expanded, as shown by this addition of a new wing to the original building.

Newslines *from page 19*

the framework of a business venture. However, it also will establish the Overview Foundation, Udall said.

Offices have been opened in Washington, D.C., and in San Francisco, home base of landscape architect Lawrence Halprin, chairman of the executive committee.

"Overview," Udall explained, "is a logical and natural extension of and expansion upon 'the total environmental concerns' with which he had been involved during his eight years at Interior.

"The emphasis," he continued, "will not be on paper plans or futuristic studies but on the now, on the practical political implemention of concepts, plans and projects."

Admitting that the group has been conceived with a considerable degree of idealism, Udall maintained that there is no other organization like it in the world today. "I know of no firm which has its focus," he declared.

While the board chairman was not specific in what kinds of projects it might undertake initially, he let it be known that Overview is ready to "tackle large-scale environmental assignments — a new city, a plan for a sick city, the planning of a whole transportation system."

Overview's other officers have Interior backgrounds. Henry L. Kimelman, commissioner to the Virgin Islands from 1961 to 1964 and, more recently, assistant to the Secretary, is president and treasurer; Henry S. Bloomgarden, special assistant to Udall from 1966 to 1968, is vice president; and Mrs. Sharon Francis, also a special assistant before become the Assistant for Conservation and Beautification to Mrs. Lyndon B. Johnson, is secretary.

Manufacturers Establish Insulation Association

A new association of manufacturers concerned with acoustical and thermal insulation is now in operation at 111 W. Washington St., Chicago.

The Acoustical and Insulating Materials Association (AIMA), constituting 14 manufacturers, has taken over the functions of the Acoustical Materials Association — the *Bulletin* of which will be continued by AIMA — and the Insulation Board Institute.

Executive vice president of AIMA is James E. Nolan, who held the same position with the National Woodwork Manufacturers Association. Frederick O. Schweizer, vice president and general manager of the Building and Industry Products Operations for Armstrong Cork Co., has been elected as the first president.

Arc Welding Papers Win Awards for Architects

Architects came in for their share of laurels in the 1968 James F. Lincoln Arc Welding Foundation Awards program — for outstanding progress in engineering design—although an engineer won the first prize of $10,000.

A. E. Schmidt, with the firm of Sverdrup & Parcel & Associates, Inc., of St. Louis, took the top award for his paper on St. Louis' Poplar Street Bridge, a welded

Continued on page 28

Workwall Movable Partitions

Action Walls that Move!

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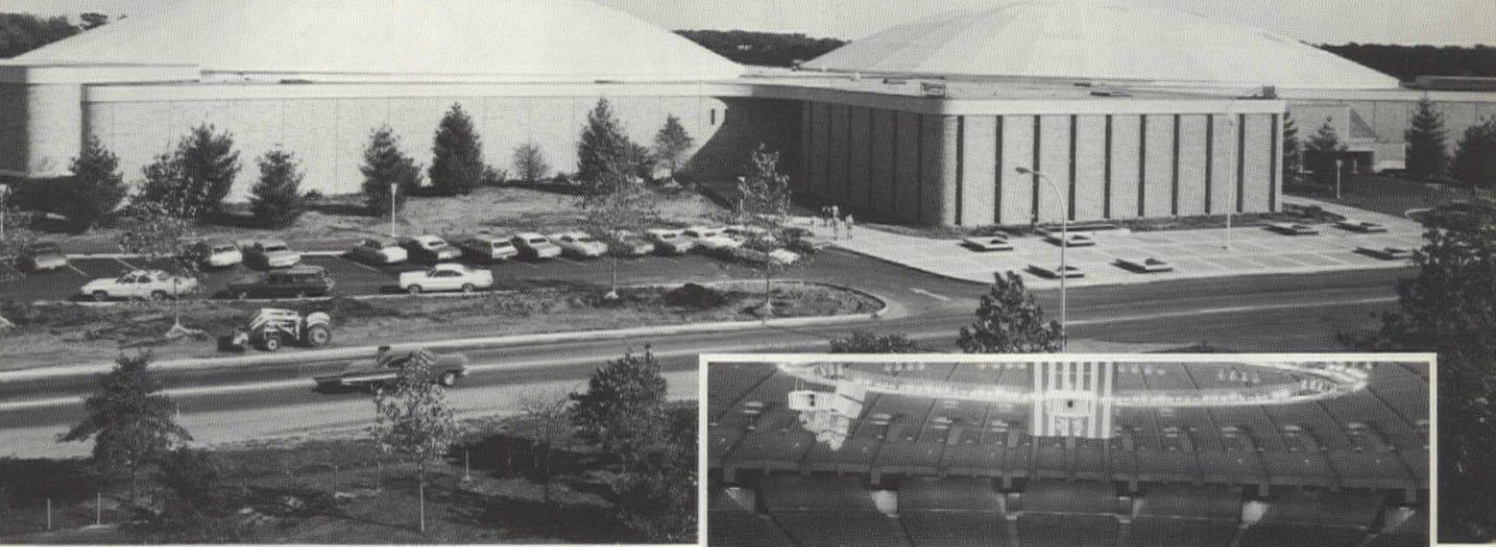
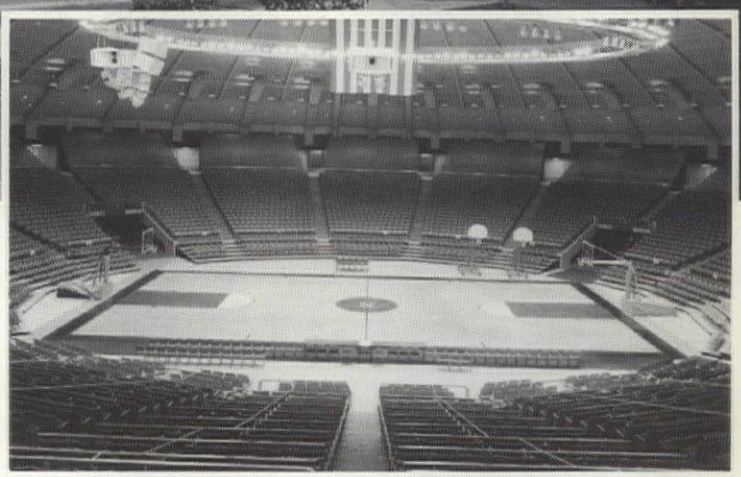


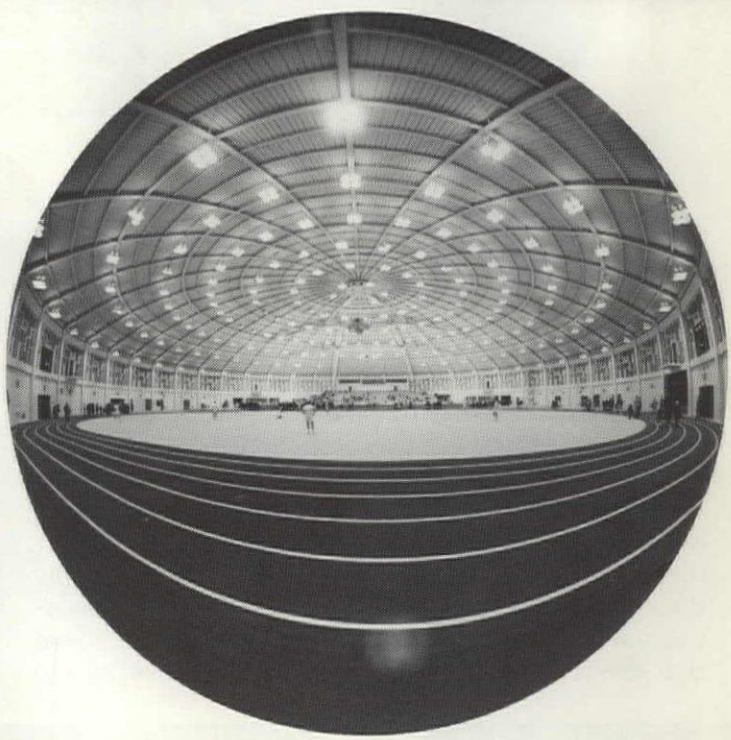


New Notre Dame University Athletic and Convocation Center. Architect: Ellerbe Architects, St. Paul, Minn.

TROPHY Gym Finish, the finish for champions, again takes its place in one of the newest and finest athletic facilities. This fabulous $8.6 million University of Notre Dame Athletic-Convocation Center provides both athletic-auditorium facilities for the campus and exhibit and convention space for the community.

With two huge domes covering 10½ acres of ground, the building encloses more area than the famous Astrodome. The south arena auditorium seats 11,000 and houses the basketball floor designed and built by Bauer-Foster Floors Inc. The north arena is either a fieldhouse where tennis and hockey—and many other activities—can be going on at the same time, or a gigantic exhibition space. Five auxiliary gymnasiums and many workout areas are provided in this spacious building. Administrative and business offices are located in a central complex which joins the two arenas.

TROPHY was chosen for all wood sports floors. Trophy forms a hard, smooth, slip-resistant, glare-free surface that is ideal for fast-play and telecasting. In addition, TROPHY offers unprecedented wearability, beauty and ease of maintenance.



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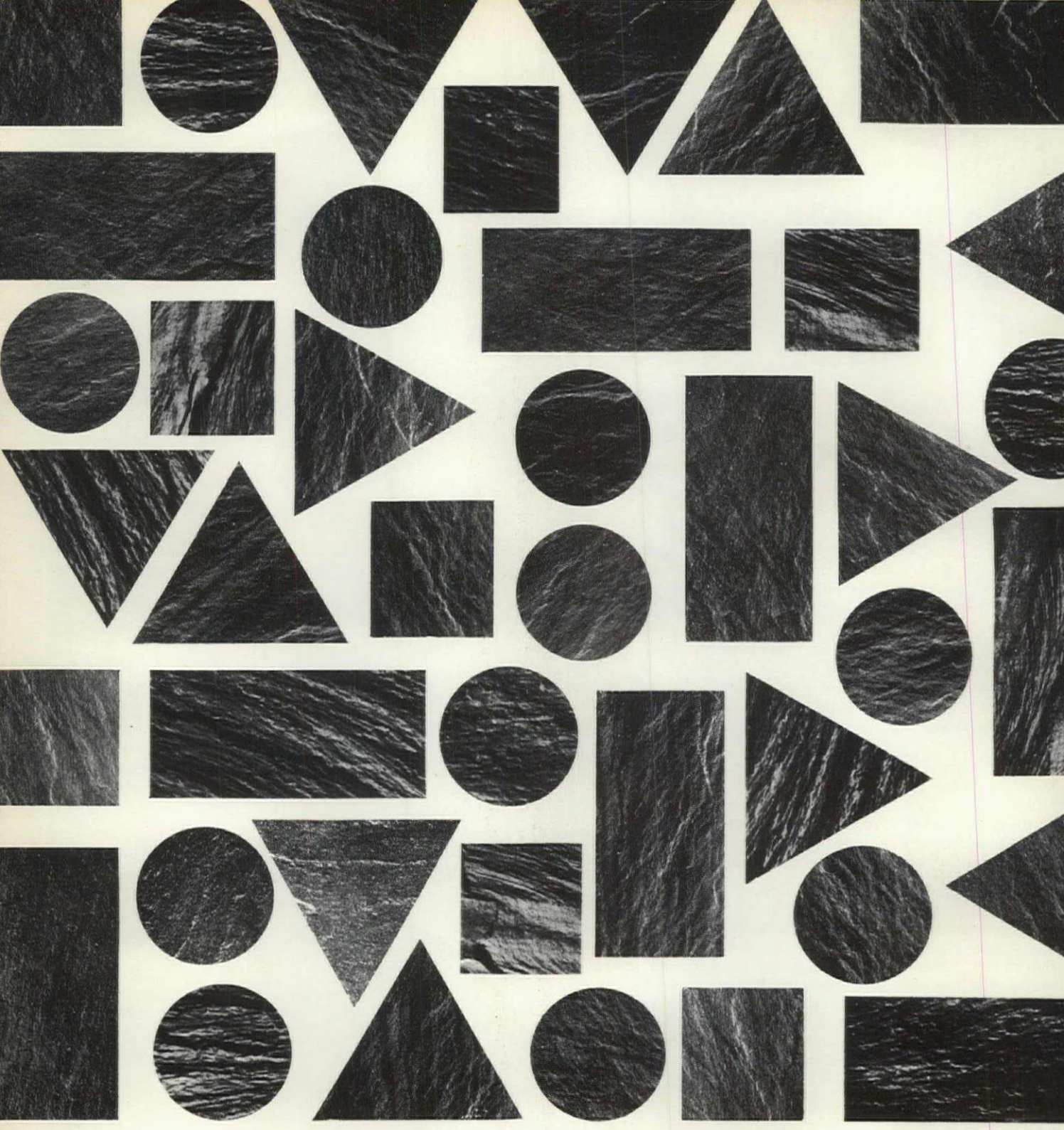

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CONTRACT DOCUMENT SERVICE

A service being established by the Institute would automatically furnish members with copies of new or revised contract documents.

To become fully operational, however, it must have a minimum of 1,000 subscribers paying a one-year fee of $5.

George M. White, chairman of the Documents Review Committee, who believes today's legal climate demands thorough familiarity with the latest contract documents, said the service would "ensure, at least, the receipt of such material as it is published during the year."

Subscribers, who should make checks payable to The American Institute of Architects and send them to the Documents Division at the Octagon, will be supplied an initial packet of 12 recently revised documents. Remittances will be returned if the minimum subscription level is not reached within weeks.

Newslines *from page 22*

orthotropic plate deck girder span over the Mississippi and in the shadow of the Gateway Arch.

David Haid, AIA, of Chicago, received the second-place $7,000 prize for his paper describing the design of a restaurant and motorist facility built over an Illinois highway.

Third place and $5,000 went to Phiroze K. Wadia, structural design engineer with Skidmore, Owings & Merrill, San Francisco, for his entry on the use of arc welding in San Francisco's Alcoa Building.

Other architects who placed in the program were Gene W. Jones, AIA, Raleigh, N.C.; Edgar Robert Firant, AIA, Grand Rapids, Mich.; and Charles Warren Callister and John Morgan Payne, AIA, Tiburon, Calif.

More Off-Campus Pads, Housing Survey Suggests

A survey covering 500 smaller colleges — with an average of 1,360 full-time students — has produced some interesting statistics on the college housing picture.

The colleges involved averaged a total of 633 on-campus and 173 off-campus housing units. These figures will change to 758 and 123, respectively, by 1972-73, for an increase of 6 percent, says Corco, Inc., Chicago-based consulting, design and equipment firm which conducted the survey.

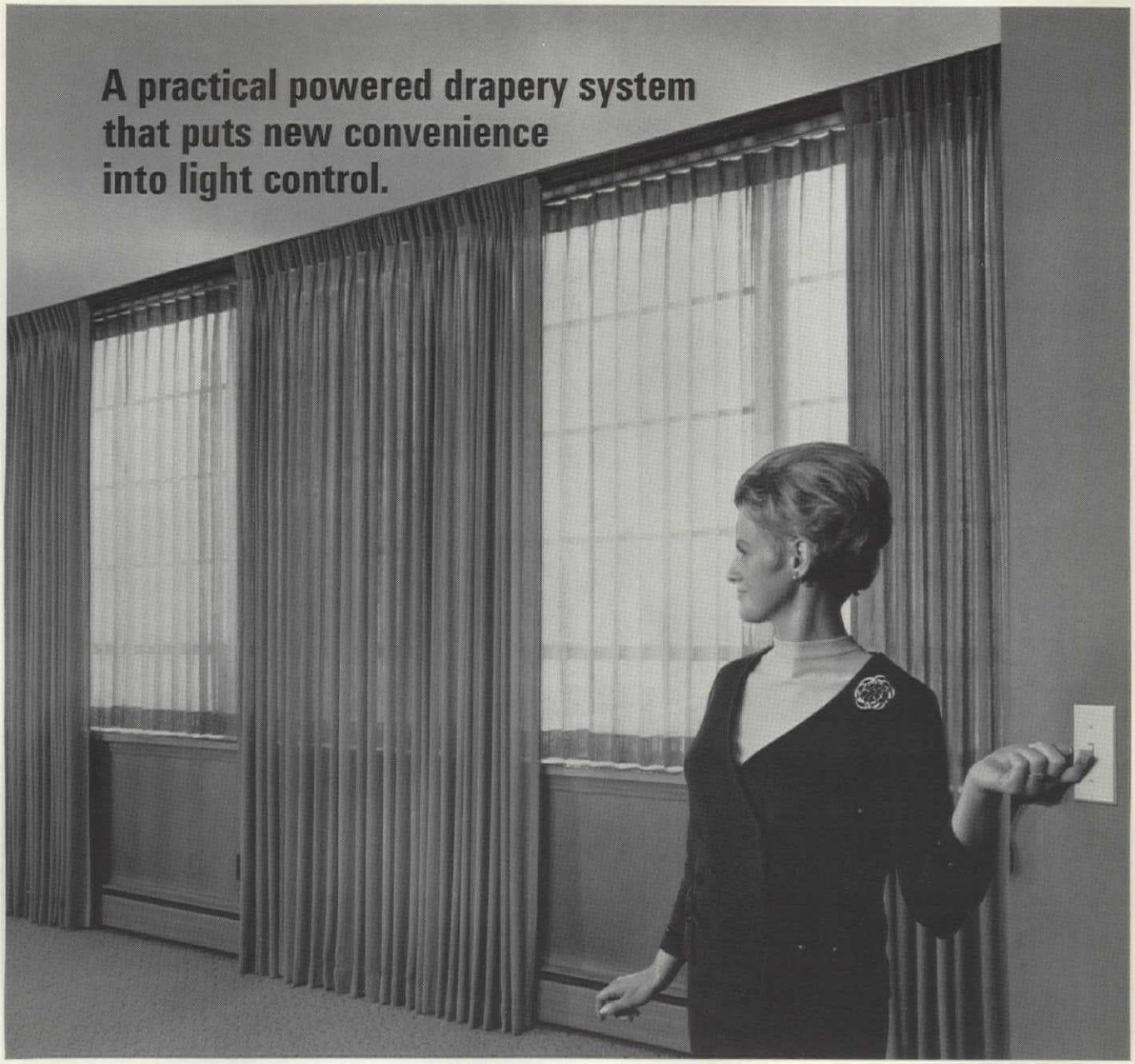
What is puzzling, in the view of Corco President Jack P. Solovy, "is that while student enrollments will increase 19 percent, these schools are providing for only a 6 percent increase in housing units."

When surveyed, the schools offered housing for 60 percent of their students, while in 1973, college-provided housing will drop to 54 percent.

The drop, Solovy reports, could be attributed to a greater number of nonresidential students, a larger number of off-campus housing facilities not registered with the school, such as private apartments, or a combination of both. The expectation, he added, is in keeping with demands for more student independence.

For the small school, Solovy said, the real challenge is in investigating new approaches to expansion problems that will otherwise threaten the school's existence.

Continued on page 32



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Electrac gives you great new possibilities in window architecture. You can design broad expanses of glass without worrying about glaring people to death, because Electrac can operate draperies on a single window or a bank of windows with the touch of a switch.

Draperies flow smoothly, effortlessly. A single master switch location can control all the draperies, and can be located anywhere. There are no cords to tangle, no gears or mechanisms to get out of order. Electrac can be planned as part of a new building's wiring system, and is available with radio remote control or time control units.

**Hidden from view, this power capsule glides along the inside rear of an Electrac rod, operating draperies as it goes.*

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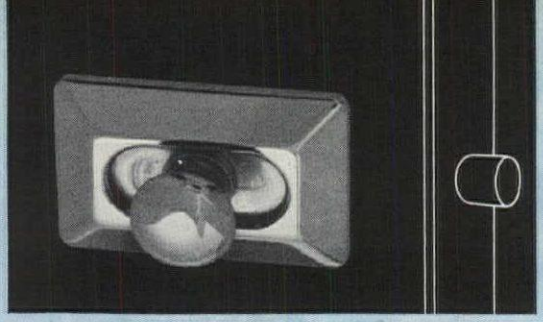

Solid brass plus the added protection of brilliant chromium plate. The latch, which offers the lift-free emergency access feature, is recessed within the door. The stainless steel bolt automatically retracts if the door is slammed.

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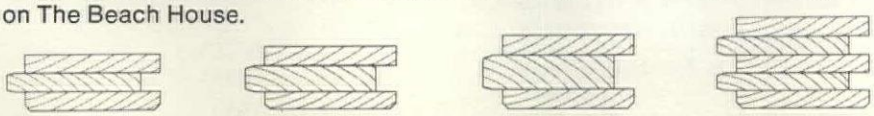
Harry H. Gesner, Design—Architectural
Emil Carlson, Engineer—Structural

Lock-Deck® decking and laminated beams and bents were specified as the primary building system for this spectacular beach home overlooking the Pacific Ocean at Malibu Beach. Blond finished laminated Inland Cedar Lock-Deck combined with laminated bents bring the grace of ancient gothic to this most modern of contemporary structures. Potlatch engineered wood products provide structural integrity, design freedom, insulation properties and deep aesthetic appeal.

For details on this dramatic home, write for a special Architectural Report on The Beach House.



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For details see Sweet's Architectural file 1c/Po.

Lock-Deck is available in 4 thicknesses and 2 face widths. Electro-Lam® beams in all sections up to 162 sq. in., lengths to 60 ft.

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Newslines *from page 28*

Improved Examinations Goal of NCARB Study

The National Council of Architectural Registration Boards, which has been working on the development of nationwide uniform examinations for licensure, is undertaking a validation study.

The study involves the assembling of opinions of ability from persons who know the candidates personally through the use of a questionnaire covering the seven NCARB examinations: History and Theory, Site Planning, Architectural Design, Building Construction, Structural Design, Administration and Building Equipment.

Said Harry E. Rodman, FAIA, chairman of the Committee on Examinations: "It is a way of using personal long-term evaluations, which cannot in themselves be a basis for licensure, as a means of learning if the objective examinations are effective in accomplishing our intent. This should be a valid guide for improvement."

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Cel-Way in-floor electrification adapts itself to the whole spectrum of architectural ideas and construction techniques: high rise, low rise, concrete frame, steel frame, interior landscaping.

Here is *system* in the pure sense of the word. All electrical services—telephone, power, signal—are neatly sandwiched into a single slender floor slab. This floor fitting and in-floor electric cell system accommodates itself to any building module. It meets all electrical requirements for the present, and anticipates changed or expanded needs for the future. It's the perfect antidote for building obsolescence.

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Here is *versatility* which opens the way to innovations never before possible, like supplying partitions with all three electrical services through a single entrance.

For the complete Cel-Way story, including construction and installation details, specifications and other data, check Sweet's 1e/Gr, or write for Cel-Way product manual. Granco Steel Products Company, 6506 North Broadway, St. Louis, Mo. 63147. A subsidiary of Granite City Steel Co.

Circle 271 on information card

IMAGINATION IN STEEL **GRANCO** Steel

UNFINISHED BUSINESS

BY ROBERT L. DURHAM, FAIA
Institute Past President

A Primer on Federal Contracting

Almost every licensed architect has at one time or another received a notice from a government agency advising that it is considering the construction of a facility and inviting him to make his interest known. Even though he may do so, nothing further develops. He wonders why other architects are interviewed, other firms retained.

If he is fortunate enough to be interviewed, the unfamiliarity of the procedures and the ways in which government administrators go through their ritual leave the average architect, experienced solely in private practice, perplexed and unhappy.

In trying to learn the mysteries of designing for the government, I have been equally frustrated by some of my colleagues in the profession. When asked about certain procedures my colleagues may reply, "Oh, that's very simple. Sometime I'll tell you about it." Somehow, there never seems to be an occasion when your friend takes down his hair and really levels with you. In the meantime he seems to continue to prosper while you stand at the door wistfully hoping for future recognition and a generous commission.

But now the Institute, in cooperation with several engineering societies, has produced the "Architect/Engineer's Primer on Federal Government Contracting." This should help take the mystery out of negotiating with the government.

For their diligent efforts in preparing the primer, a great deal of credit is due Philip A. Hutchinson Jr., director of AIA Governmental Affairs, Julian E. Berla, FAIA, and his Committee on Federal Agencies and the many architects and engineers in private practice who reviewed the text and offered valuable suggestions. It is authored by three outstanding government contract attorneys — Harold F. Blasky, Eldon H. Crowell and Gilbert A. Cueno—and Hutchinson. Much collaboration has been carried on with government personnel knowledgeable in the field of federal construction.

Primary purpose of the primer is to give the practitioner a basic understanding of the rules the government follows when contracting for A/E services. It is by no means a comprehensive text, but gives the rudiments and enough leads to permit pursuit of federal work in an intelligent manner. It covers such topics as:

- how the government selects architects and engineers
- how the A/E's fee is arrived at (including heretofore unpublished government fee curves)
- how to obtain contract price adjustment
- standard contract clauses and what they mean.

It also gives practical advice on what to do when certain situations are encountered; for example, how to proceed when the contracting officer issues orders which the A/E views as a change; what to do when the government contracting officer terminates the A/E for default. Pointers on reasons for default, excusable causes, your liability, the government's right and what you must do should be very helpful.

The primer may also help in some measure to standardize procedures among government agencies. It seems reasonable to expect government to do business like private industry. If unusual procedures or personal interpretations can be isolated and discussed, better practice standards may develop.

In an appendix the primer lists all federal construction agencies responsible for A/E contracts with complete titles and addresses of officials.

The primer is a gift to the A/E professions, made possible by the hard work of Institute committee members and staff and by the cooperative efforts of counterparts in the engineering societies. It is the only one of its kind, developed specifically to the rules, regulations and problems of architects and engineers who work with — or hope to work with — the federal government.

Government work is the least remunerative for architects, yielding the lowest profit — 6.3 percent of gross project income — of all client groups. Architects, however, have faired better than other government contractors: In recent years the overall profits earned by all contractors doing government work reportedly have varied between an average of 3 to 4.5 percent.

Nevertheless, you will find government work professionally rewarding and profitable if you know and understand the ground rules. It is hoped that the guidelines included in the primer will be steppingstones toward better design and more appropriate profit in both private and public sectors. □

Details on how to obtain copies of the "Architect/Engineer's Primer on Federal Government Contracting" will appear in the *Memo* in the near future.

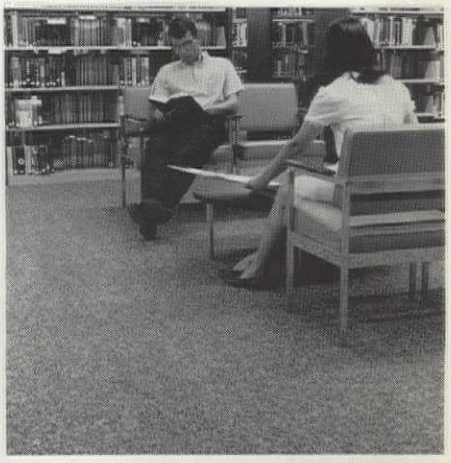
"How do you like your newly carpeted college?"

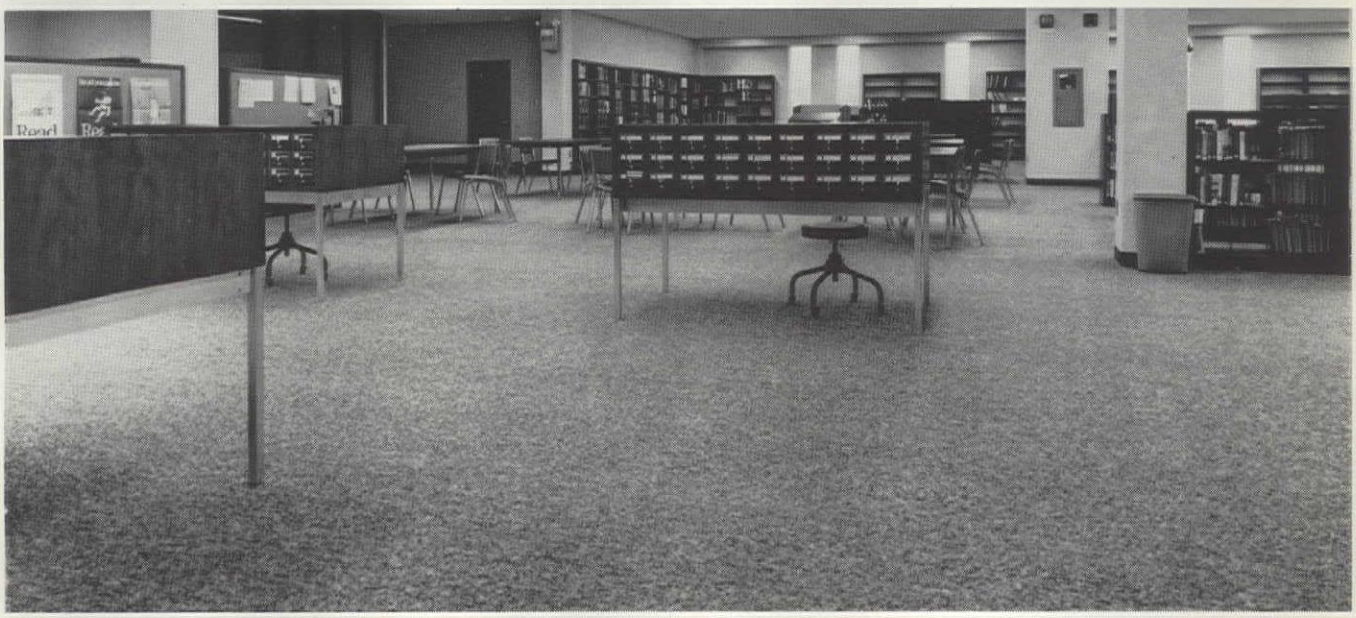
A tape-recorded interview at Jefferson College, Hillsboro, Missouri

Rose Ann Sanders, Secretary, Dean of Admissions. "We have quite a few parents and students who come to see the college, and it makes quite an impression as soon as they step into a corridor that's carpeted. I'm sure the students enjoy it, and I know in our office it cuts down noise."

M. F. Long, Business Manager, Jefferson College. "If you view carpet in terms of dollars and cents, there's no doubt we should have carpet in future buildings—in classrooms and corridors. There is not the maintenance required and when you evaluate the cost on a daily basis, there's no doubt that it is more economical than tile or other hard materials."

Robert Ross, Student Counselor. "I've found a decided change in atmosphere since we've had carpeting. It's easier to work with students. There are no distractions. I think the best part is that it adds a certain air of sophistication to all the offices and to the college."





Bill Severe, President of Student Body. "I would like all the buildings that could practically have carpeting, to have it. In the halls and classrooms, I think it would really be nice."

Bigelow carpet was specified for the library and the Dean's offices at Jefferson College, Hillsboro, Missouri. Why do architects specify Bigelow? Because they know no other carpet mill approaches Bigelow's experience in commercial carpet—just as no other mill approaches Bigelow's 143-years of experience making carpet. For more information about the advantages of carpet, write for our free illustrated booklet, "Bigelow Carpets Go to School."

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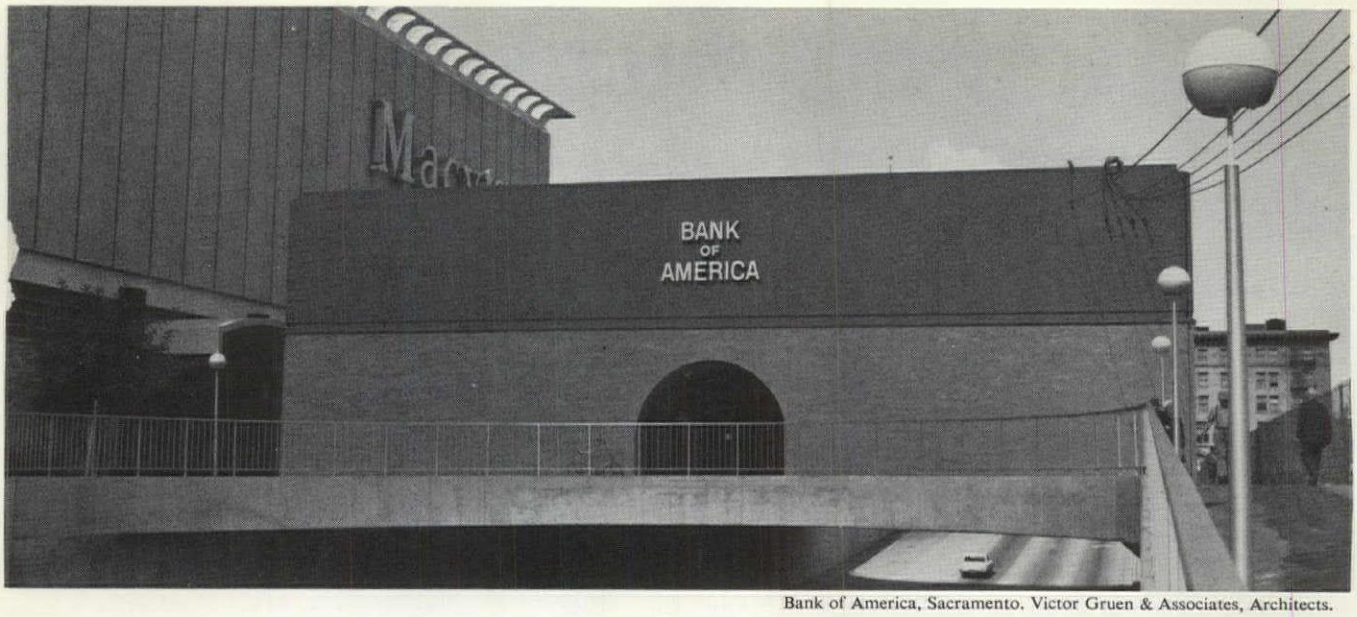

Bank of America, Sacramento. Victor Gruen & Associates, Architects.

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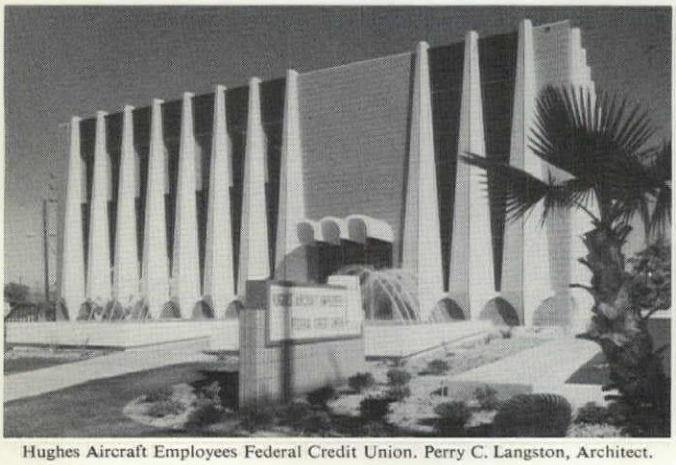

Hughes Aircraft Employees Federal Credit Union. Perry C. Langston, Architect.

Pasadena Savings and Loan. Neptune and Thomas, Architects.

Coming into favor with American architects is the use of "Brickplate," a type of ceramic tile with the density of natural granite that has been popular with European designers for years. Since 1963 it has been made available in this country and Canada by Gail International Corporation, a subsidiary of Wilhelm Gail Ceramics, Giessen, Germany.

Previously, American designers have had to improvise when using exterior tiles with materials primarily intended for flooring use. Brickplate, on the other hand, is intended for the exterior, being completely frost proof, and allows more freedom of design with a wide variety of shapes in glazed and unglazed finishes. Gail conveniently produces these tiles in modular English sizes for the American market.

Because of their low absorption, Gail tiles have dovetail ribs on the back which make a mechanical key with the setting mortar, hence, they are suitable for pre-cast and tilt-up construction as recently employed in the Serramonte Shopping Center, Daly City, California; Welton Becket & Associates, Architects.

Although mass produced in one of the most automated ceramic facilities in the world, thus modest in price, Brickplate has a warm, handcrafted quality achieved through its controlled color variation. The same dense body is used for both glazed and unglazed finishes.

For additional information, prices, samples, local representative, etc., write Gail International Corp., or see our Catalog in Sweet's Architectural, Interior Design, and Industrial Files.

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Comment & Opinion: Ten years after the President's Committee on Employment of the Handicapped and the National Easter Seal Society for Crippled Children and Adults co-sponsored a project to eliminate barriers to the handicapped in public buildings and facilities, President Johnson signed Public Law 90-480. This legislation requires that all federal structures as well as those financially assisted with federal funds be made accessible to the handicapped. The only exceptions are certain military installations and residential buildings containing three or less units.

The law also stipulates that when public structures undergo extensive alterations, the elimination of barriers to the handicapped shall be included as part of the contract. About 40 states have passed similar measures requiring that state-owned buildings be made accessible to the handicapped, and some of them, along with many municipalities, are adopting building codes affecting all private projects.

There are standard specifications, as the article that follows explains, to guide the architect in designing barrier-free architecture. But why have such directives been necessary in the first place? The answer is simply that, up to now for the most part, architects have never given much thought to the 10 percent of our population we designate as handicapped. Buildings were actually designed for the 90 percent we consider to be the average man.

Meanwhile, the population of handicapped persons keeps increasing. Every year 100,000 babies are born with the kind of defects that will force them to use crutches, braces or wheelchairs all of their lives. Add to that the hundreds of thousands crippled in traffic accidents, the war veterans, the aged and those who are temporarily handicapped for one reason or another.

These laws and codes should not be considered as restrictive, however. Instead, they should provide the practitioner with a reservoir of ideas and design concepts that will become the catalyst to create a better, sounder architecture. LEON CHATELAIN JR., FAIA

President, National Easter Seal Society for Crippled Children and Adults

Buildings for All to Use

The goal of barrier-free architecture

BY JAMES F. HILLEARY, AIA

Should an architect receive a commission to design a federal project or, for that matter, a public building at state or county level in some 40 states across the country, he would encounter recently legislated barrier-free requirements for the construction of the project. Though at cursory glance these requirements may seem complex or demanding, the architect will find, after investigation, that the cure is easier than the prescription would imply and that barrier-free provisions have no appreciable effect on the budget nor restraint on creative concepts.

Simply stated, "barrier free" implies a lack of obstacles. The intent is that the buildings may be entered and used by all regardless of physical condition. Though a barrier legislation is somewhat more comprehensive, the basic principles can be accomplished with a three-point program by providing:

1. At least one entrance easily negotiated by all regardless of method of locomotion. This is accomplished if the entrance is without steps and the door is wide enough for easy admittance.

2. Accessibility to all floors. In multistory construction an elevator suffices if the door is wide enough for the passage of a wheelchair.

3. One usable lavatory for each sex. This requires the installation of one stall wide enough to be negotiated, spacious enough for maneuvering and equipped with grab bars to assist in the operation.

Though legislated, the federal requirements have not taken final form as yet. Until their appearance, such projects must meet the standards required by the General Services Administration which were developed from the standards formulated by the USA Standards Institute (formerly the American Standards Association) under the sponsorship of the National Society for Crippled Children and Adults and the President's Committee on Employment of the Physically Handicapped. These same standards have been the guide for most state legislation to date.

The author: Mr. Hilleary, a Silver Spring, Maryland, practitioner, served on the Task Force Committee for Barrier-Free Architecture of the Potomac Valley Chapter AIA.

Beyond the basics outlined in the three point program, the USASI standards refine the working details for:

- **Walks:** width and slope for ease of navigation
- **Parking Space:** width for loading and unloading safely
- **Ramps:** slope and surfacing for easier use
- **Stairs:** steps without projected stair nosings
- **Floor Surfacing:** nonslip flooring for safety
- **Mirrors:** mounting heights for all needs
- **Water Fountains:** type and mounting height for easy use
- **Public Phones:** type and mounting height for normal wheelchairs
- **Controls:** mounting height of light switches etc., for all to reach
- **Identification:** raised numbers and numerals for either sight or touch
- **Warning Signals:** audible and visual for all needs.

These standards impress with their logic and need and the fact that meeting them can be easily accomplished with standard equipment and no visible restriction to creative design. But most impressive of all is the realization that though the basic aim may have been initially to assist the handicapped, the result of the research and development has given us a set of standards which, when followed, result in buildings which are more comfortably used by all.

The American Institute of Architects did not pioneer the field of barrier-free design. This honor rightly belongs to the many organizations devoted to the problems of the handicapped and who have long crusaded in their behalf. However, since the dawning of a national awareness of a need, the AIA has assumed an active role in the promotion of barrier-free design.

This need and the birth of a national awareness was dramatically learned in 1957 when the late Hugo Deffner, an insurance man from Oklahoma City, selected Handicapped American of the Year, was not able to negotiate a stairway to receive his award from President Eisenhower. That he had to be carried in by two husky marines shockingly illustrated a need for design without barriers to facilitate a building's total use and respect the dignity of all men.

In 1958, we nationally faced our problem when the subject of a barrier-free architecture was placed on the agenda of the President's Committee's Cabinet Advisory Council for discussion. On recommendation of its members, a committee was formed to study the problem and make recommendation for action. A tentative guide was prepared for discussion and review which suggested and explored the possibility of the development of a set of building standards under the auspices of the standards institute.

The result of this action was the development of the previously mentioned USASI standards which, since their release in 1961, have formed the groundwork for all legislation to follow. But though the problems of the handicapped instigated the initial concept, we, in the years since, have come to appreciate that their application benefits a broader public than first imagined.

However, though the USASI standards were

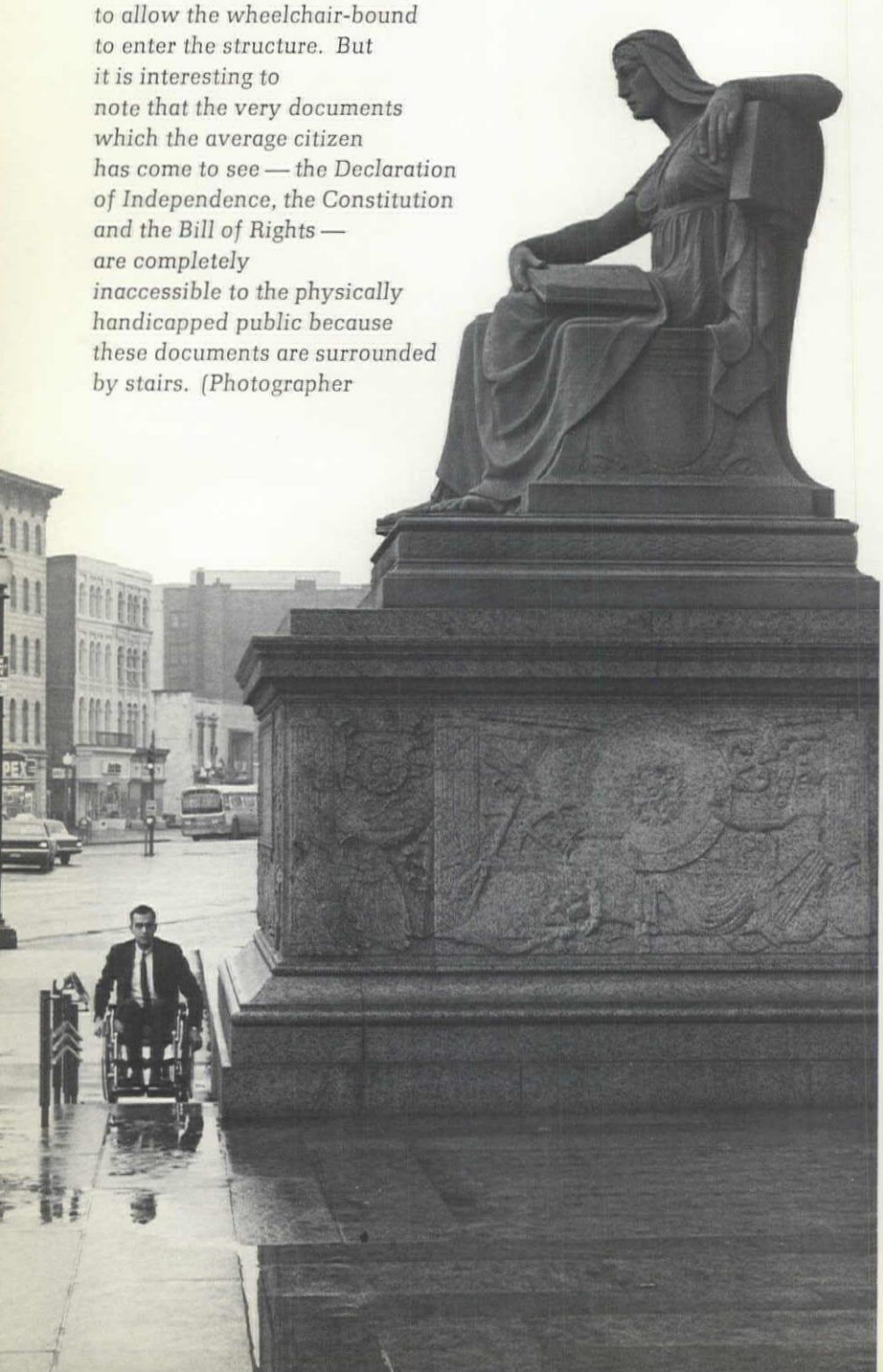
Buildings for All to Use?

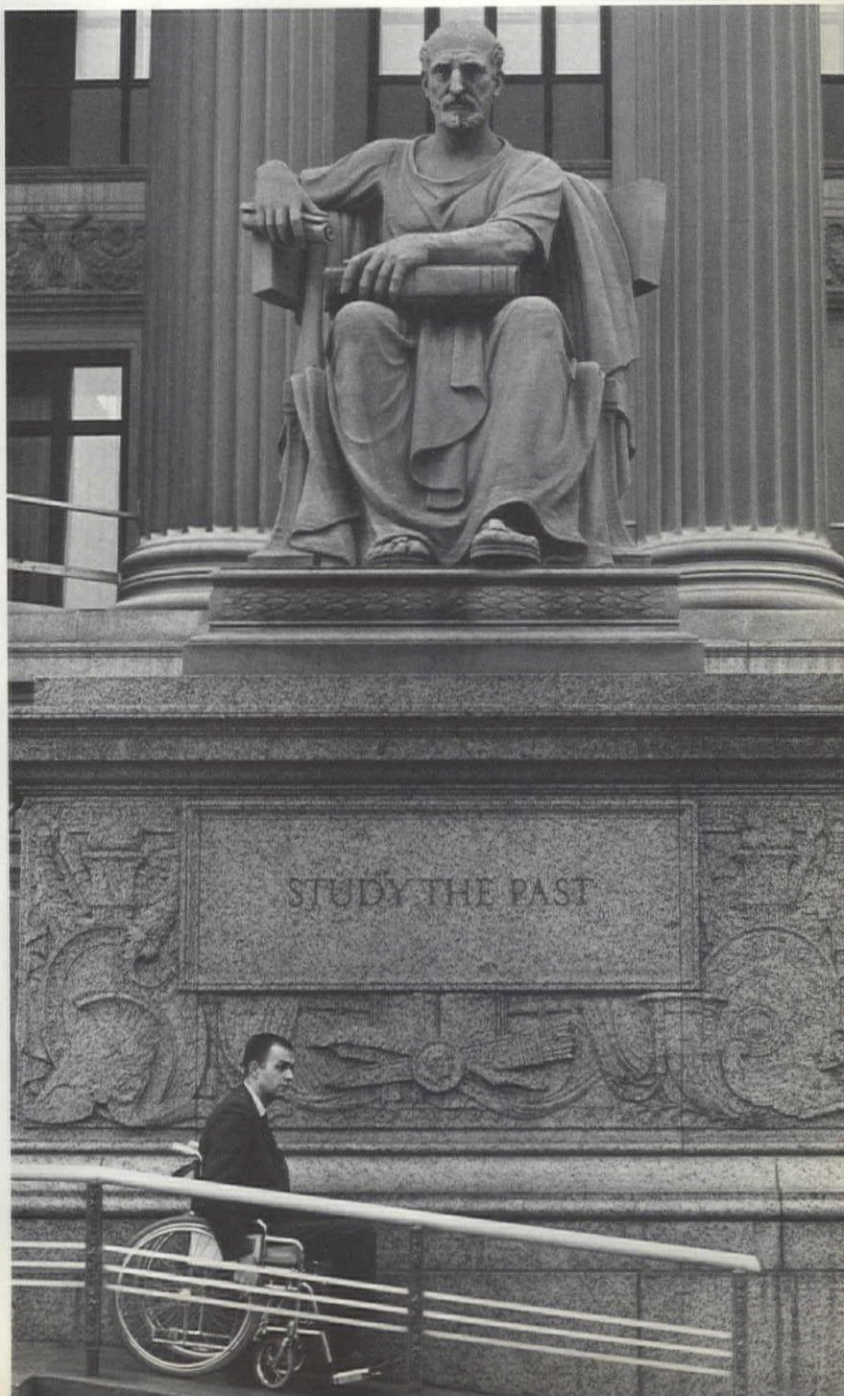
This question, subconsciously at least, must be pondered again and again by the physically handicapped, as it undoubtedly was by Peter Lassen when he volunteered to serve as a model for photographs to illustrate this article. Lassen, who is executive director of the Paralyzed Veterans of America, Inc., describes his journey into and through the Archives Building:

"The 'Government Classical' architecture has been mutilated to allow the wheelchair-bound to enter the structure. But it is interesting to note that the very documents which the average citizen has come to see — the Declaration of Independence, the Constitution and the Bill of Rights — are completely inaccessible to the physically handicapped public because these documents are surrounded by stairs. (Photographer Ron Jones lifted Lassen inside the roped area shown at right.) Parking spaces for the wheelchair-bound visitor are nonexistent. The closest adequate space would require my jumping at least two curbs and crossing a heavily traveled main traffic artery — Constitution Avenue. I parked (illegally) at the curb in front of the Archives Building. Once inside, I discovered, this time to my delight, what are probably the largest passenger elevators in Washington, D.C. It is seldom that I can wheel onto an elevator and turn to face forward without bruising another passenger's ankles, running over a few feet and ruining at least one shoeshine. Those elevators are great!

I rode to the third-floor level to the Hall of States, a narrow, semicircular corridor through which one must travel to reach the Constitution exhibit. So far, so good. But then I met my Waterloo! At the end of the hall there are two short flights of stairs to the pedestal in which the Constitution is encased. Further, one must walk up the three-stair pedestal to see the three keystones of our democracy. Those two short flights might just as well have been a hundred or more.

People are always willing to help the wheelchair-bound. But until we construct and remodel buildings to make them completely accessible to and usable by the physically handicapped, a large number of persons will be denied full independence and participation in our society. Such construction need not insult the esthetic sense of the building or the individual. I have confidence in the ability of our architects to provide the essential and artistic means if they are so directed."




STUDY THE PAST

released in 1961 and mailed to all members of the AIA, acceptance and use of these standards by architects and all others in a decisive position has been slow and disappointing.

Realizing that this indifference existed and that positive action was needed to stimulate interest, Congress established the National Commission on Architectural Barriers in 1965 and designated the Rehabilitation Services Administration of the US Department of Health, Education and Welfare to provide staff and administration. In 1966 the President appointed the members of this commission with a former national AIA president, Leon Chatelain Jr., FAIA, as its chairman.

The AIA offered to assist in the work of the commission, and in December 1966 agreement was reached on a work prospectus and a grant made to the Institute by the Rehabilitation Services Administration.

The Potomac Valley Chapter, through the active interest of a member, Edward H. Noakes, AIA, was designated task force to "explore the reasons why the USASI standards have not been implemented, and to explore and test one or more means of reaching the architect and others who affect building decisions with concepts and usable materials which can be translated into decisions for barrier-free architecture."

The task force set to work with the following principal objectives:

1. To ascertain, through pilot study, reasons for failure by architects, building owners and others to include provisions for the handicapped in buildings.

2. To devise new materials and methods of presentation to reach the architectural and building communities with a view to encourage barrier-free architecture.

3. To develop and test a prototype package of illustrative and/or other problem-defining and instructional material.

4. To outline a long-range program of implementation of the devised plan and means for stimulating and conducting continued research.

Through a national survey, interviews at chapter and national levels, presentation of test graphic and informative material and the staging of a seminar, the committee was able to reach valuable conclusions and make recommendations for future activity. This information was given to the Institute in the form of a formal report, and a special issue of the *Potomac Valley Architect,* the chapter magazine, was devoted to reporting the findings of the task force.

Most significant, at a national level these surveys disclosed a lack of appreciation for the need of a barrier-free architecture, ignorance of the true physical condition of our population today and the need for concise instructional and reference material.

These studies further pointed out the need for encouraging client acceptance of barrier-free design both as a matter of public responsibility and as a service to the real market, through development of a climate of concern and understanding.

This is about where we stand today as a profession involved in the encouragement of a barrier-free architecture. Fortunately, we are not alone in the crusade, for our efforts have been paralleled by those of many individuals, organizations and institutions too numerous to mention. Some of these have worked and crusaded with a concern for the problems of a specific aspect of the disability. We as architects, since it is natural that we involve ourselves, should be concerned with all aspects of disability. Before we can do so, however, we must first understand the true condition of man as he exists today if we are to design for the total man.

There have been many and complex factors contributing to our condition in the 1960s.

1. Drugs and operating techniques saved more veterans of our recent wars than was ever before possible; a marvelous accomplishment but one that has given us a higher percentage of major and minor disabilities.

2. Better incomes have produced better diets and medical aid resulting in a longevity which is accompanied by the problems of age and infirmity.

3. Greater mobility has increased the percentage of accidents and injuries.

4. Population explosion has increased the numbers of the well and infirm.

5. Despite prosperity, the continuing problems of poverty and the underprivileged have their effect on our national health.

6. Increase in leisure time and leisure time sports and activities has increased the percentage of accidents.

7. The sheer stress of contemporary life, continued use of and the increase of drug experimentation are having their effect on health and physical condition.

The list of causes is limitless for the state in which we find ourselves today, a state which is hard for many to perceive but one that must be understood if we are to get on with the job and produce an enlightened architecture.

The truth is that there is no clearly defined separation between the well and the infirm and that in our time many of those considered well suffer some infirmity. The old idea that a barrier-free architecture was catering to a minority is no longer valid. This we know, or should know, but how do we convince our clients? Legislation in public buildings is a great step in the right direction, but we will not have won the battle until

legislation is accepted for all private buildings as well. Before we can accomplish this, we have an educating job to do, for part of acceptance is understanding.

That some understand the problem is clearly demonstrated in many of the shopping centers today where everyone can navigate with complete ease from parking lot through all the buildings. Though sales promotion may have played a large role in their motivation, nevertheless the method of including everybody was mastered and *stands* as a practical demonstration of how easily a barrier-free architecture is achieved.

Now we must convince our clients to apply this learned technology to all buildings even if the motivation is the same; for the principle of the shopping center should be applied to whole cities so that all, regardless of physical condition, can avail themselves of the many opportunities provided in our present civilization.

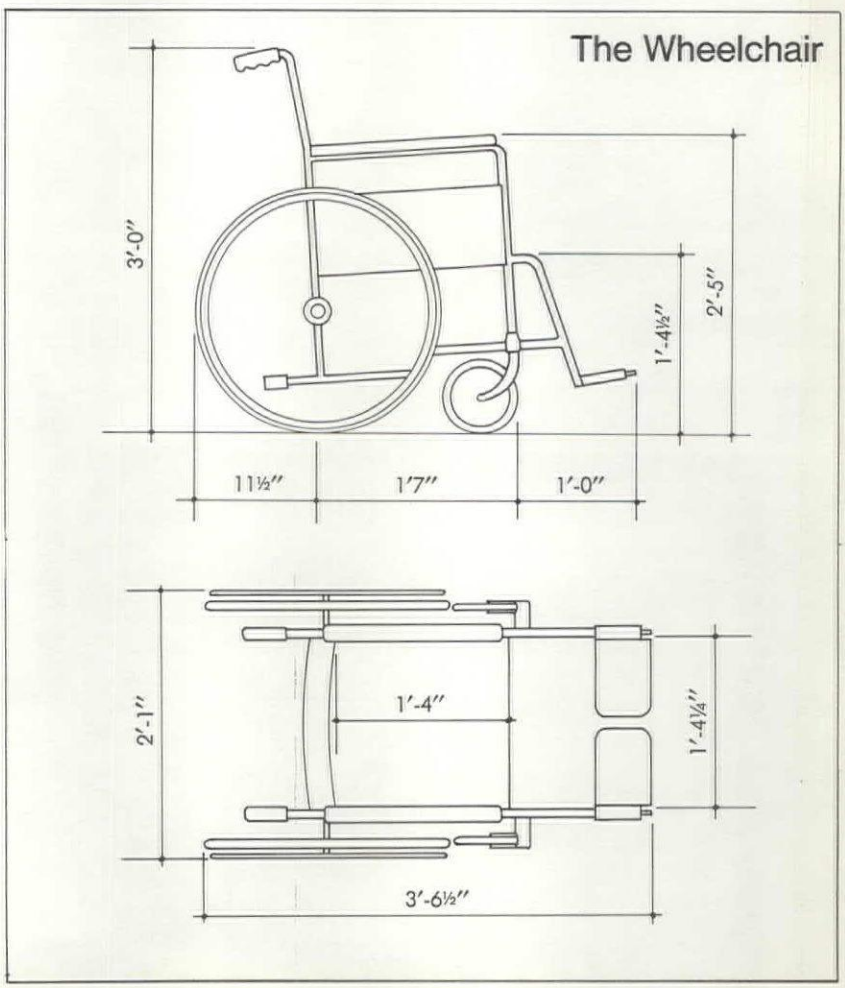
We as practitioners owe our clients comprehensive as well as creative design, and discriminatory thinking is not enlightened practice.

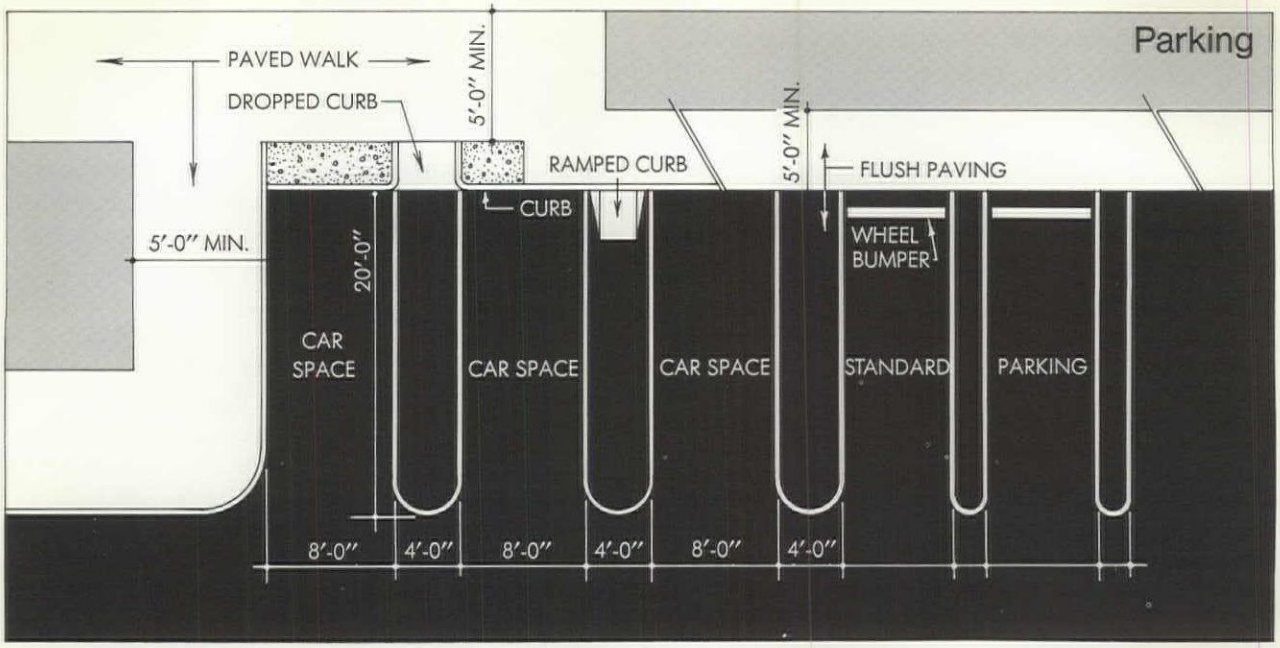
The material and methods of self-education with regard to barrier-free design are many and await investigation. An annotated bibliography has been included, since there has been much published on the subject in recent years. A symposium was held by the Potomac Valley Chapter as part of its task force program and was found to be most effective, since it not only involved the profession but all those who exert any influence in the building industry, legislators, educators, bankers, developers and financing agencies. Their concern attracted the interest of the press, radio and television media, thus bringing the issue to the entire population of metropolitan Washington.

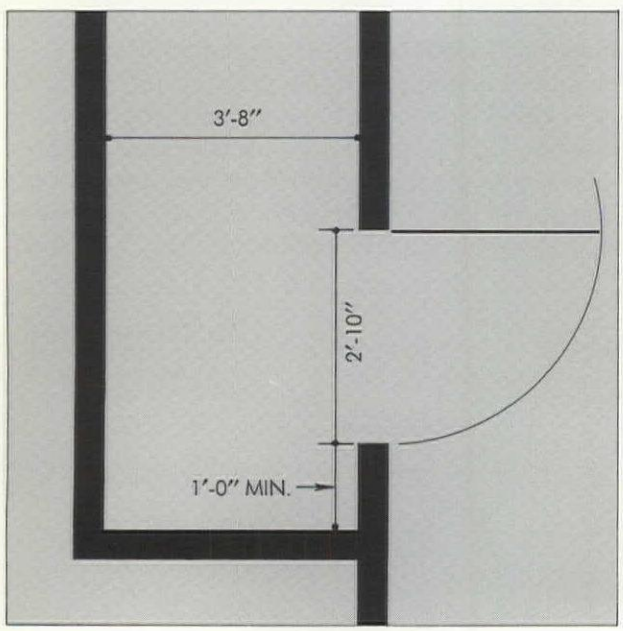
The truth that a picture is sometimes better than a thousand words was practically demonstrated when the television cameras followed Fred Fay, paralyzed by an athletic accident, on a wheelchair tour of the nation's capital. His trials and tribulations were followed by a TV-watching public and a point made effortlessly in favor of barrier-free design.

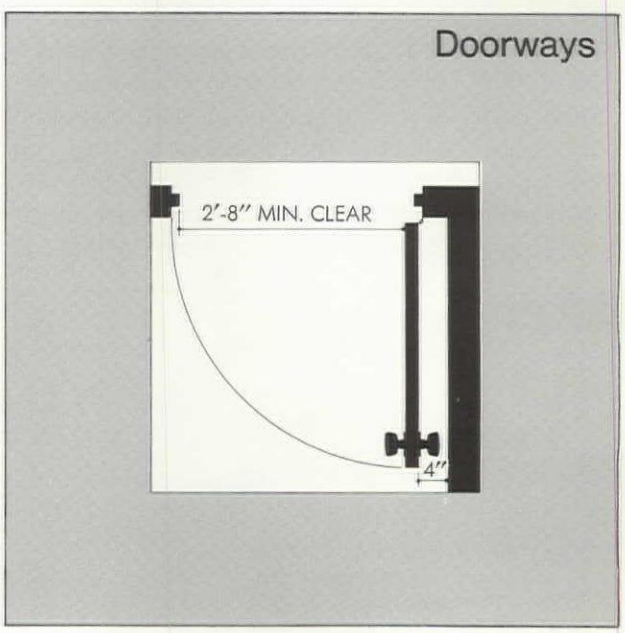
Many agencies representing the handicapped stand ready to assist the profession in its efforts, many educators stand ready to give addresses, films are available for presentation at AIA chapter meetings and pamphlets and booklets are available. Recognition by the federal government and 36 states clearly points out the seriousness of the problem and their willingness to correct it. As practitioners, we owe it to ourselves as well as our clients to design with all in mind.

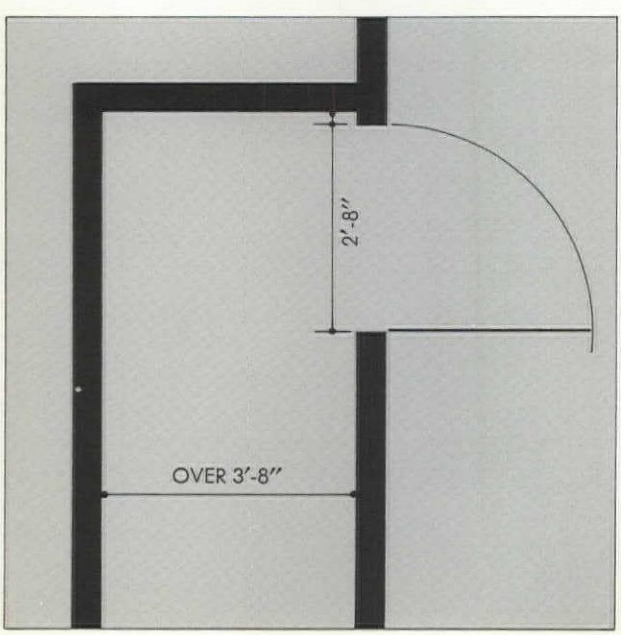
Many aids are employed by the handicapped to maintain mobility. The wheelchair is the most affected by design because of its fixed dimensions. When design caters to the needs of the wheelchair user, it caters to the needs of everyone.

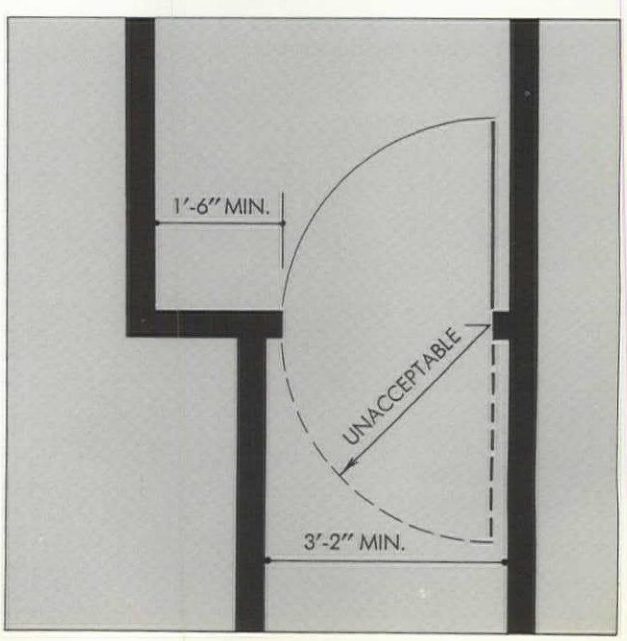


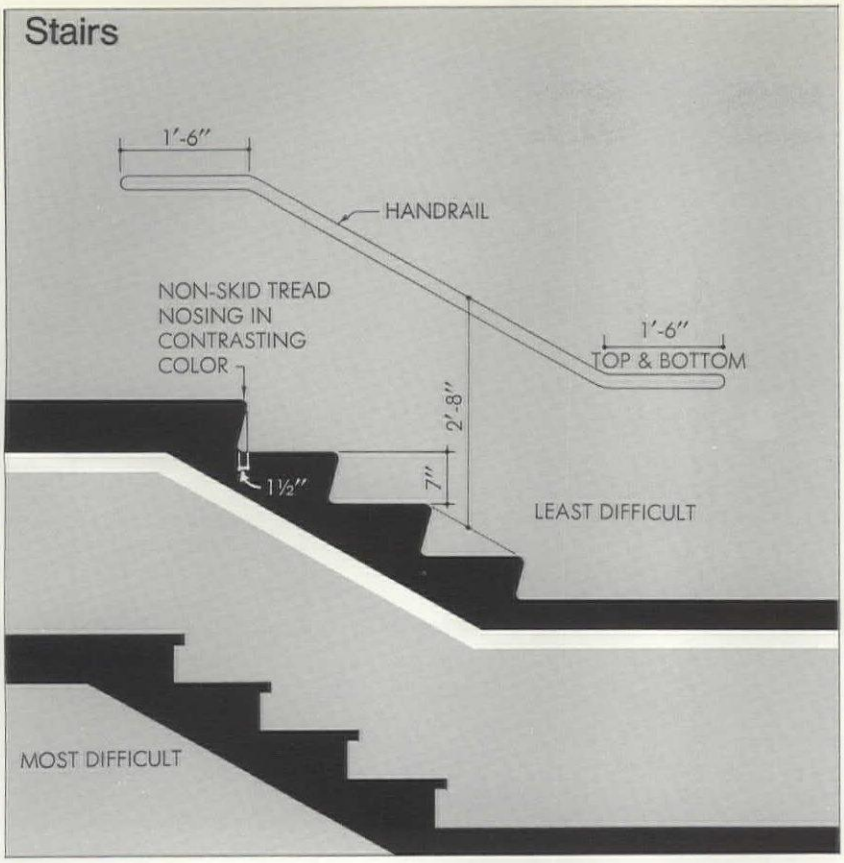

Parking
PAVED WALK
DROPPED CURB
5'-0" MIN.
RAMPED CURB
5'-0" MIN.
FLUSH PAVING
CURB
WHEEL BUMPER
5'-0" MIN.
20'-0"
CAR SPACE
CAR SPACE
CAR SPACE
STANDARD
PARKING
8'-0"
4'-0"
8'-0"
4'-0"
8'-0"
4'-0"

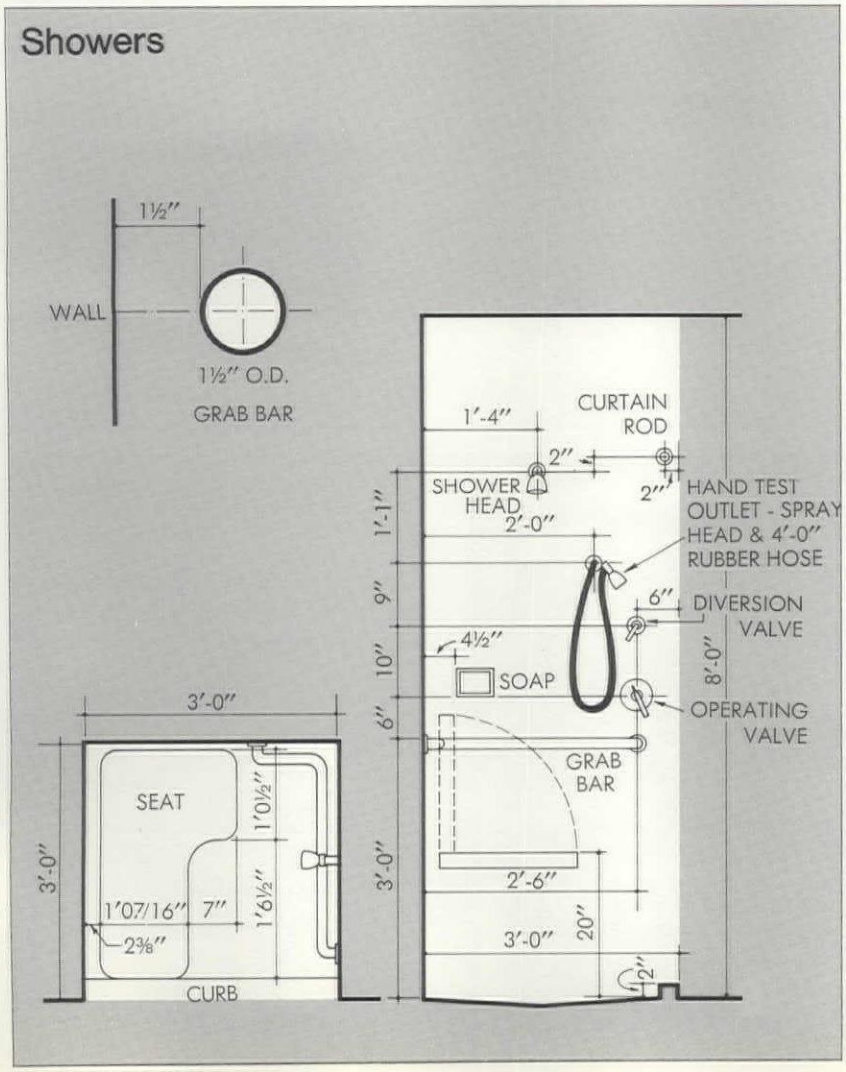

3'-8"
2'-10"
1'-0" MIN.


Doorways
2'-8" MIN. CLEAR
4"


2'-8"
OVER 3'-8"


1'-6" MIN.
UNACCEPTABLE
3'-2" MIN.





Parking is easier when spaces are provided near the building entrance and clearly marked for the handicapped. The spaces should be 12 feet wide, arranged to allow the individual to get out of his car onto a level surface and placed so the handicapped are not required to move behind parked cars. Access from parking lot to walkways is facilitated when lot is flush. Wheel bumpers should be spaced for access between them.

Doorways, both exterior and interior, are convenient and usable by everyone if they have a minimum clear opening of 2 feet 8 inches. However, if a hallway is only 3 feet 8 inches wide, the door should be wider and more room should be left around it for easy maneuverability. The floor on either side of the doorway should be level for a distance of 5 feet and extend at least 1 foot 6 inches on the latch side of the door on the inswinging side. Sharp inclines and abrupt changes in levels should be avoided at doorsills, thresholds kept to a minimum.

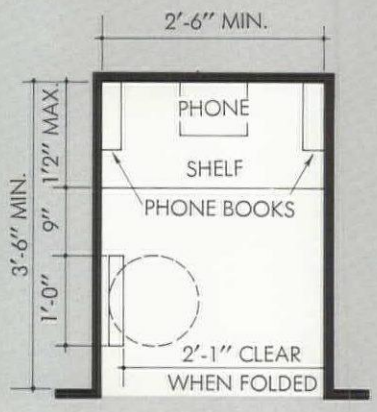
Stairs cause great difficulty to individuals with knee, ankle or hip restrictions, artificial legs, leg braces or crutches. Most difficult are steps with projecting nosings which catch the toes; least difficult are steps with a nosing flush with the riser, especially if the steps have a non-skid tread. The nosing should be in a contrasting color. The stairs should have handrails 2 feet 8 inches high, measured from the tread at the face of the riser, and the rail should extend 1 foot 6 inches or more beyond top and bottom steps. Riser should not exceed 7 inches.

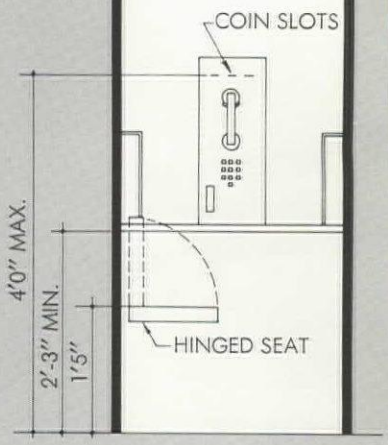
Showers should be available to handicapped or elderly people in institutions, dormitories or other places where they might be housed. Shower stalls should have a seat for those who must or prefer to be seated while taking a shower. This seat should be hinged so it can be folded out of the way for those who prefer to stand up.

Public telephones should be placed so there is no more than 4 feet to the dial, coin slot and receiver. An optional folding seat should be easily operable. Doors must not impinge on clearance of 2 feet 8 inches.

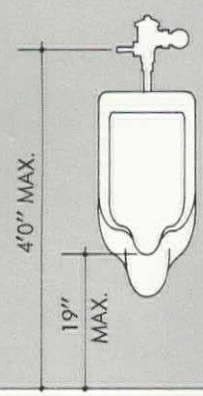
Restrooms should have one toilet stall for the handicapped. Sink etc. should be no higher than 4 feet from the floor, lip of urinals no more than 1 foot 7 inches and flush valve no higher than 4 feet.

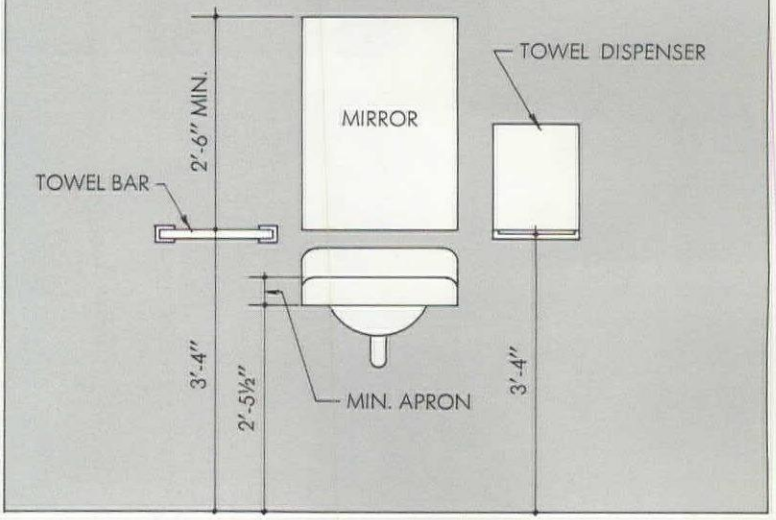
Public Telephones

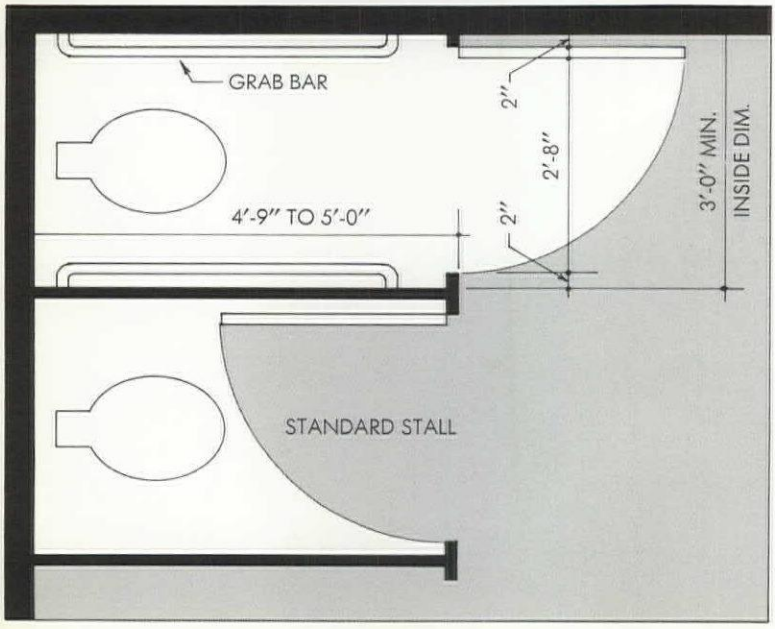


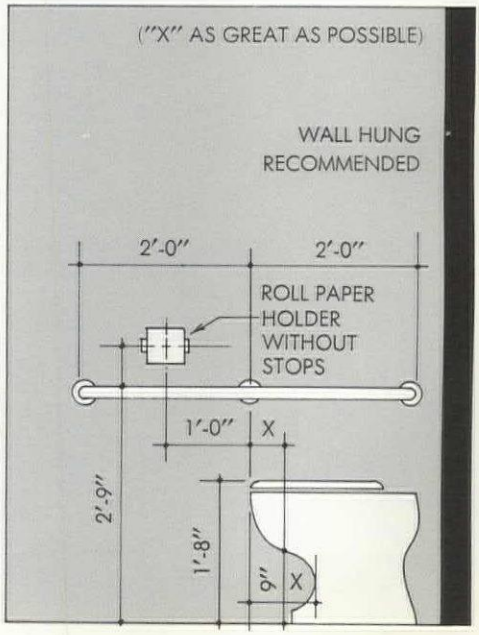


Restrooms









An Annotated Bibliography on Barrier-Free Architecture

GENERAL

American Institute of Architects. Task Force on Architectural Barriers. **The Real Man.** Washington, D.C. 1968. Unpaged. Loose-leaf. Contains measured drawings of the wheelchair, parking lots, doorways, drinking fountains, stairs, restrooms, showers and public telephones—all designed for the handicapped.

Associate Committee on National Building Code. **Building Standards for the Handicapped, 1965.** Ottawa, Canada: National Research Council. 1965. 20 pp. A guide to the design and construction of buildings with provisions for making them accessible to the physically handicapped without assistance. Recommendations concern safety factors to be incorporated in public buildings and, particularly, in buildings for industry.

Dantona, Robert, and Benjamin Tessler. **Architectural Barriers for the Handicapped: A Survey of the Law in the United States.** Chicago: National Society for Crippled Children and Adults. 1967. 10 pp. Findings and evaluations of legislative measures passed in regard to the standards set forth by the American Standards Association (now the USA Standards Institute) for making buildings and facilities accessible to and usable by the physically handicapped. Much of the legislation is inadequate in order to achieve the elimination of architectural barriers. The construction and remodeling of educational institutions is an encouraging sign, however.

Federation Internationale des Mutiles et Invalides du Travail et des Invalides Civils. **Gli Invalidi e le Barriere Architettoniche.** Rome: Italian National Association for Disabled Workers. 1966. 408 pp. Contains papers presented at a 1965 international conference on architectural barriers attended by engineers, architects, representatives of the disabled, the disabled themselves, government officials, rehabilitation center directors, and social welfare workers from 13 countries. Efforts in the various countries to remove architectural barriers are reported; six suggestions for action are included.

Goldsmith, Selwyn. **Designing for the Disabled: A Manual of Technical Information.** London: Royal Institute of British Architects. 1963. 236 pp. See note for the second edition.

Goldsmith, Selwyn. **Designing for the Disabled.** 2nd ed. London: Royal Institute of British Architects. 1967. 207 pp. Completely revised, with new text and new illustrations. The philosophical approach is different and more attention is paid to public buildings. The first edition held that a building planned to give the handicapped complete independence would be more convenient for all. Goldsmith now finds a conflict of interest between so-called normal people and those in wheelchairs unavoidable. He feels too much stress on independence can result in ill-advised solutions to architectural problems. He advocates some specially designed accommodations and suggests they be marked showing the purpose of the facility.

Gutman, Ernest M., and Carolyn R. Gutman. **Wheelchair to Independence: Architectural Barriers Eliminated.** Springfield, Ill.: Charles E. Thomas. 1968. 136 pp. Aimed primarily at the elimination of architectural obstructions that adversely affect users of wheelchairs.

Joint Committee of the Public Health Service and the Vocational Rehabilitation Administration. **Areawide Planning of Facilities for Rehabilitation Services.** Washington, D.C.; Department of Health, Education, and Welfare. 1963. 88 pp. Covers "the meaning of rehabilitation: current patterns, problems and trends in rehabilitation facilities and services; goals and principles of planning; and techniques for planning and implementation of action."

Leschly, Vibeke, and Alice and Borge Kjaer. **General Lines in Designs of Dwellings for Handicapped Confined to Wheelchairs Part 2.** Hellerup, Denmark: Danish National Association for Infantile Paralysis. 1960. 66 pp. A physiotherapist and two architects concentrate on the layout of kitchens for people confined to the wheelchair.

National Council of the Churches of Christ in the USA. **Site Selection and Development; Camps, Conferences, Retreats.** Philadelphia: United Church Press. 1965. 174 pp. Although no specific mention is made of the special needs of the handicapped or aged, this book is a basic reference on all details of planning and construction, with the addition of checklists and summary of standards to help builders.

National League of Cities, Department of Urban Studies. **State and Local Efforts to Eliminate Architectural Barriers to the Handicapped, 1967.** Washington, D. C., 1967. 162 pp. Describes and evaluates legislative and other official actions of state and local governments designed to eliminate architectural barriers. It examines activities and attitudes of certain nongovernmental agencies and private citizens as they relate to the effect of architectural barriers on people who are disabled. The report includes in-depth case studies of seven cities that have initiated or supported architectural barrier removal programs.

National Research Council, Building Research Institute. **New Building Research, Fall 1960: Proceedings of a Conference Held as Part of the 1960 Fall Conferences.** Washington, D. C., 1961. 172 pp. "Design of Buildings to Permit Their Use by the Physically Handicapped," by Timothy J. Nugent, pp. 51-66. Reports on how existing buildings can be adapted for use by the handicapped and includes research for construction of new buildings. Gives a checklist for design considerations from the American Standards Association.

National Society for Crippled Children and Adults. **Proceedings of the National Institute on Making Buildings and Facilities Accessible to and Usable by the Physically Handicapped; a National Institute on Architectural Barriers.** Chicago, 1966. 86 pp. Spiral binding. Covers such subjects as the problems and progress in elimination of architectural barriers and the prevention of barriers through design.

National Steel Products Co. **Bathroom Layouts for Hospitals, Homes for the Aged, and Related Institutions.** Los Angeles, 1962. 35 pp.

US President's Committee on Employment of the Handicapped. **Guide to the National Parks and Monuments for Handicapped Tourists.** Washington, D. C., 1966. 81 pp. Intended as an aid in planning trips, the guide contains information obtained from a questionnaire survey of more than 200 units of the National Park Service. The sad fact is that a great majority of the sites of interest are inaccessible or mainly so, emphasizing the need for elimination of architectural barriers.

US Public Health Service. Division of Hospital and Medical Facilities. **Design of Facilities for the Mentally Retarded; Diagnosis and Evaluation, Education and Training, Living Units.** Washington, D. C., 1966. 46 pp. Concerns facilities providing direct services (both day and residential, providing 24-hour services.) Sections deal with programming, writing the program project, design concepts (including site development), types of physical facilities and individual elements of facilities required to accommodate the wide range of services and disciplines. Basic planning considerations and construction costs are discussed briefly. Floor plans are given for various types of centers, sheltered workshop and living units for nonambulatory and ambulatory.

United States of America Standards Institute. **American Standard Specifications for Making Buildings and Facilities Accessible to, and Usuable by, the Physically Handicapped.** New York, 1961. 11 pp. A standard sponsored by the National Society for

Crippled Children and Adults and by the President's Committee on Employment of the Physically Handicapped. Standards apply to all buildings used by the public.

Yuker, Harold E., Alfred Cohn and Martin A. Feldman. **The Development and Effects of an Inexpensive Elevator for Eliminating Architectural Barriers in Public Buildings.** Hempstead, N.Y.: Hofstra University. 1966. 112 pp. Contains a review of the literature on architectural barriers and their elimination, education and rehabilitation of the disabled and a description of Hofstra's program for higher education of the disabled. Architect's specifications for the lifts installed are given.

REHABILITATION

Allan, W. Scott. **Rehabilitation; a Community Challenge.** New York: Wiley. 1958. 247 pp. See especially Chapter 8, "The Rehabilitation Center," pp. 45-66.

American Hospital Asociation. **Physical Therapy Service; a Guide to Organization and Management.** rev. ed. Chicago, 1965. 48 pp. A revision of the 1957 publication *(Physical Therapy; Essentials of a Hospital Department).* Has been expanded to incorporate physical therapy services in home care programs, nursing homes, and other long-term care facilities. Covers objectives and methods, staffing, administration and finance, and the physical facilities and equipment necessary.

Gingras, G. **The Rehabilitation Center.** Montreal: Rehabilitation Institute of Montreal, 1956. 35 pp. Pictures, diagrams and descriptions showing the function and construction of a modern rehabilitation center, with data on administrative and personnel aspects of operation.

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HOUSING

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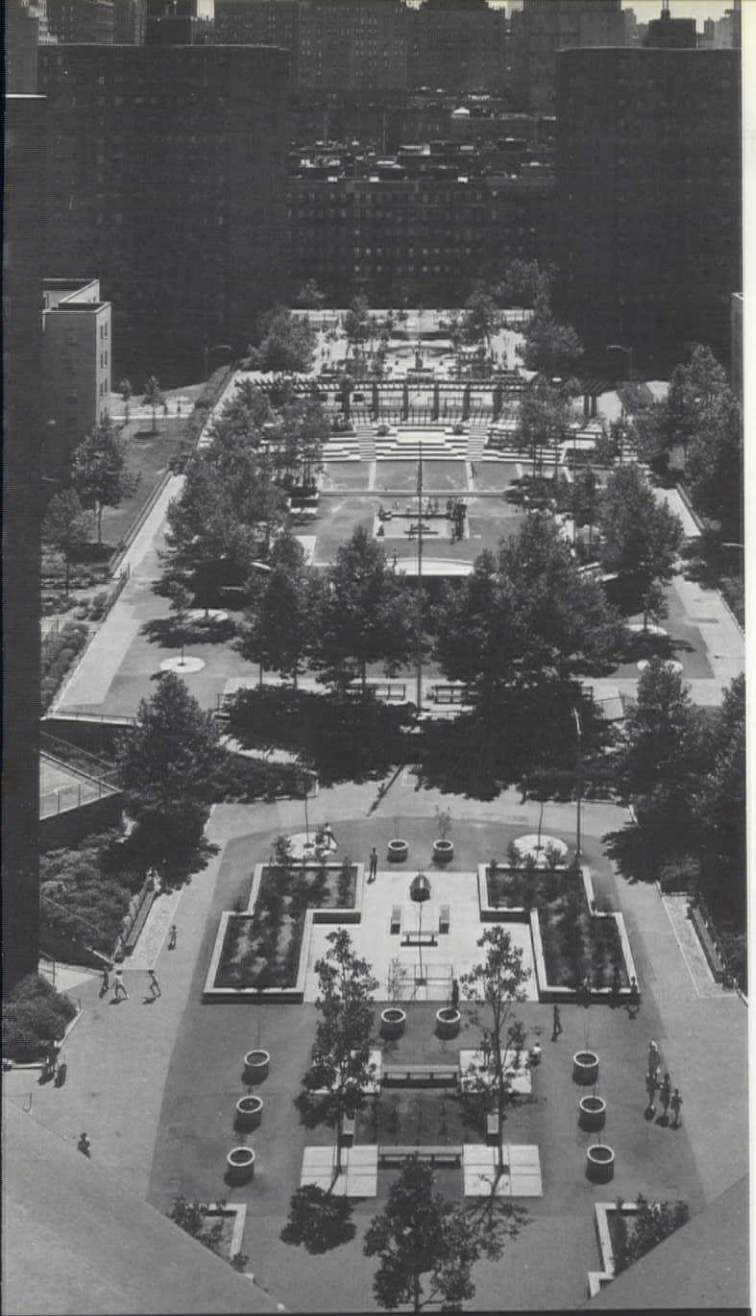
Continued on page 82



Amphitheater and pool at Manhattan's Carver Houses, above, invite residents to relax or play — a contrast to the uninviting grassy tracts common to most housing projects. Below, a dull sidewalk widened and brought to life by M. Paul Friedberg & Associates.

The development and organization of *all* open space within a city will give form to the city and provide experience to the city resident, making the city a meaningful and viable entity.

The development and planning of open spaces within a city is even further fragmented since transportation, housing, recreation, commercial and educational facilities are rarely planned on a comprehensive basis. I maintain that by integrating educational facilities into residential sections and juxtaposing these with commercial areas, organizing recreational facilities and then linking the area to existing or proposed transportation etc., we can achieve an urban form that offers a greater yield than the sum of the individual parts. This is not only an economic factor but, more important, an experiential one. Conceive of a neighborhood in which various new developments are linked together and form a pedestrian corridor with a juxtaposition of schools, shopping areas, community rooms, fountains, playgrounds, etc. Not only does movement throughout the area become meaningful, but the interplay of people and activities heightens the social experience, for it is many people thrown together in a variety of different situations that creates the excitement of living within the city.

A comprehensive open space planning system eliminates duplication of facilities and fragmentation of effort. It becomes obvious that the total cost is reduced as only the relevant facilities need be developed. This does not imply that the cost of the individual facility should be reduced. I propose that the cost for these be increased to provide a high level of design and an expanded program. The cost per square foot of developed space may be greater than the standard yardstick applied today, but the cost per person is in fact less as more people will have access to facilities. Money is spent, but the yield is great. Cost is related positively to accomplishment.

Further yields in intensely developed neighborhood open-space systems are:

- greater personal involvement on the part of the residents
- stronger identity to the neighborhood
- increased community participation and a high degree of personal pride.

Large-scale housing developments and their ancillary open space can be the backbone of such a comprehensive planning process since these include sufficient area to make the design program relevant.

Amenity is not the desired goal; for amenity implies adornment. Detailing will never have as great an effect or meaning as good basic layout and form which prompt human activities, heightening rather than deadening the experience of urban life. □

Temple of the Arts

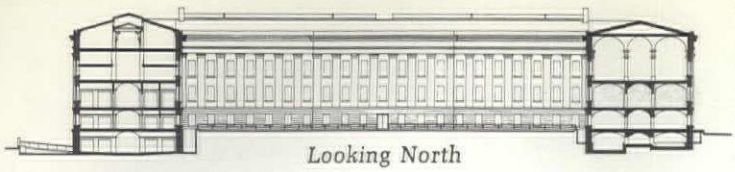
BY WILCOMB E. WASHBURN

It was raised amid dickering between designers, wing by wing due to tight money, but evolved as a leading monument in the nation's capital and was chosen for Lincoln's second inaugural ball. It was ravaged by fire and, when rebuilt, abused by government agencies, cut into to accommodate traffic and nearly leveled to give room for parking. But today, the old Patent Office Building is re-emerging prominently on the Washington scene as the Fine Arts and Portrait Galleries Building.

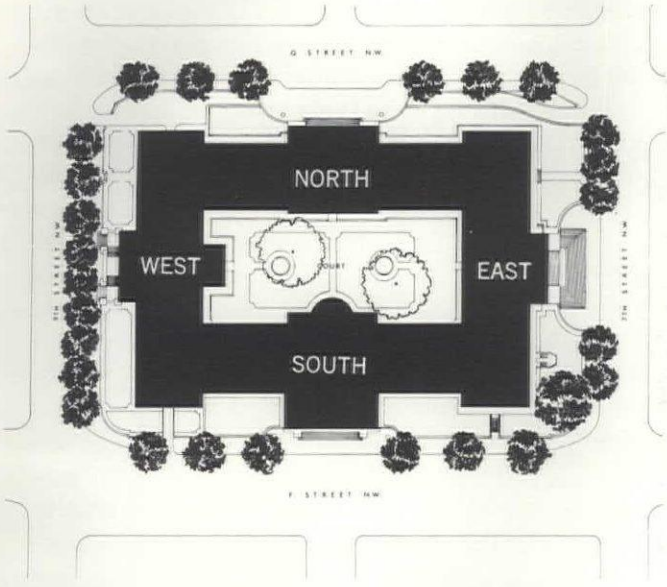
In Pierre L'Enfant's original plan for Washington the space now occupied by the Smithsonian's National Collection of Fine Arts (NCFA) and National Portrait Gallery (NPG) was reserved for a national cathedral or pantheon—a shrine honoring those who had deserved such recognition from their countrymen. The shrine was never built. But the space was used for the worship of what America did admire: technical ingenuity.

During the administration of President Andrew Jackson plans were drawn for a building—consciously termed a "temple of the useful arts"—to house the Patent Office and the models required to be submitted with each patent application. The authorizing act of July 4, 1836, specifically provided for suitable galleries and exhibition rooms and required the commissioner of the Patent Office to organize and arrange public displays of models, examples of American manufacture and work of art, both "patented or unpatented."

The south wing, the first of the four wings of the block-size building completed, was designed by William Parker Elliot (1807-1854), a young



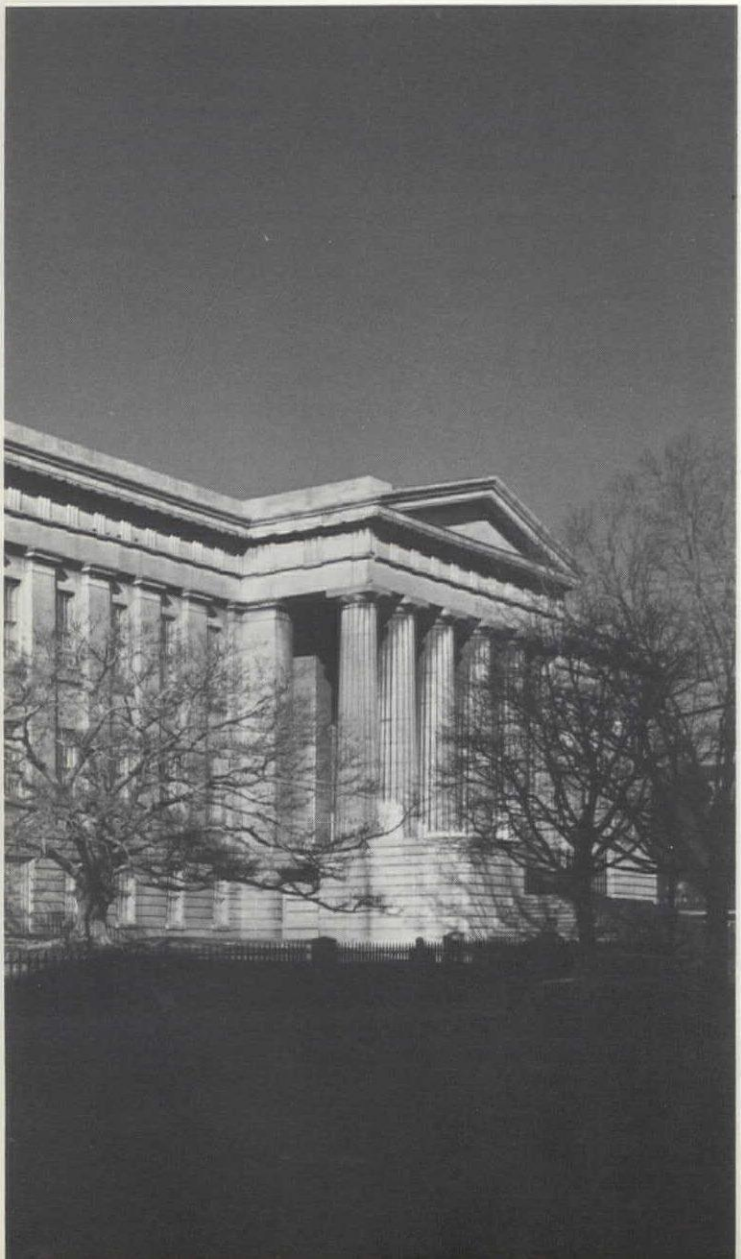
Looking North

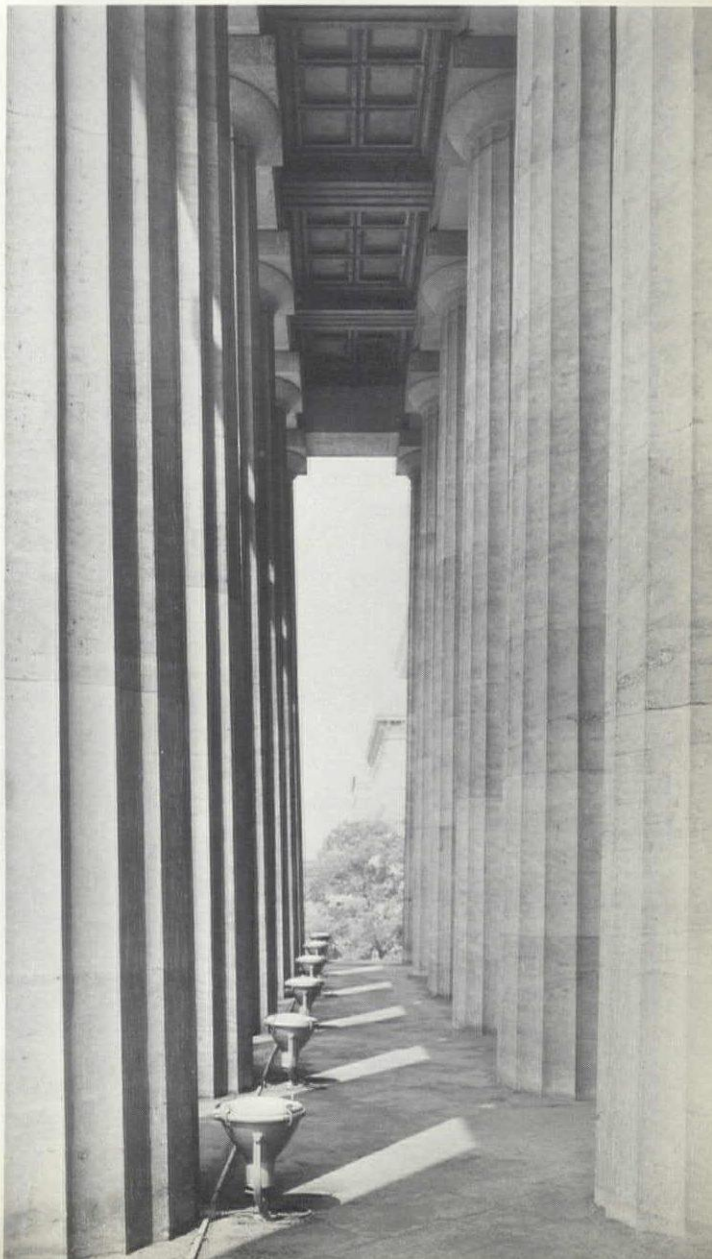


Washington agent for the firm of Ithiel Town & A. J. Davis of New York.

Davis claimed that the design, usually attributed to Elliot, was based on an earlier one of his own, and it is true that in the early years of their relationship Elliot merely hawked and pushed Davis' plans for buildings with Congressional building committees. When Congress, for example, authorized the erection of a fireproof Post Office in 1834, Elliot fired off a copy of the bill to Davis and asked for a design for it. Within a week, he received one from Davis in temple style, drawn up two years earlier. Elliot submitted it to the Commissioner of Public Buildings and to the Commissioner of Patents, who reacted favorably. Elliot noted that "Some object to it merely

New uses for the old Patent Office Building: The National Portrait Gallery is in south wing, containing double staircase and Marble Hall, the National Collection of Fine Arts in north wing. The two galleries share east and west wings. Lincoln Gallery on third floor, east wing, is seen in section above, truncated south facade in photos below. Plans by Faulkner, Stenhouse, Fryer & Faulkner.





on account of its resemblance to the Bank of the United States [an object of political attack by the Jacksonian Democrats] such is their inveterate hatred to that institution."

Elliot was ineffective in promoting Davis' designs with Congress in 1834-35. He was able, however, to convince Congress to approve designs—which he produced himself—for both the new Treasury Building and the Patent Office. Yet, after Congress approved Elliot's plans, President Jackson appointed Robert Mills supervisory architect for the buildings. The ambiguous authority and relationship between the two men led to acrimony.

"Mills is murdering the plans of the Treasury Building and Patent Office," Elliot wrote in 1836,

The author: Dr. Washburn is chairman, Department of American Studies, the Smithsonian Institution. The opinions expressed are his own.

"he is called the Idiot by the workmen. Not a working drawing has he given yet, as I am informed. Nevertheless he having rebuilt the President's Hermitage, he is the greatest Architect in the U. States in the view of the Old Hero."

In 1838 Elliot complained that Mills had "nearly ruined the design of the Patent Office" as well as the Treasury Building which is a "complete failure and is ordered to be taken down."

Despite the confusion of authority the south wing of the Patent Office was finished in 1840 and took its place as one of the leading monuments of Washington. The elaborate outer steps led the visitor into the second floor interior entrance hall where two matched curving staircases carried him up to the top floor to what was then the largest room in America. In the early years, the display of models occupied the gallery at the west end of the second floor and a large room on the first. The top floor gallery was devoted to the "national museum"—at first not so designated officially—of the United States: objects as diverse as the Declaration of Independence, products of American manufacture and specimens from the South Seas expedition of Captain John Wilkes.

As the collections grew and as the east, west and north wings were successively completed in the decades just prior to the Civil War, the exhibit space was extended completely around the top floor of the building. When Joseph Henry, in 1857, reluctantly accepted the government collections for the 10-year old Smithsonian Institution (though the transfer was not completed until 1883) the top floor galleries were gradually turned into a Hall of Models displaying the ever-increasing physical evidence of American ingenuity.

In 1870, however, the Congress made the submission of models discretionary upon the demand of the Commissioner of Patents and by 1880 virtually no models were being submitted. In the 1920s the Congress authorized the disposal of the models held by the Patent Office and the accumulated collection was variously disposed to heirs and relatives of the inventors, to the Smithsonian Institution and to buyers at public auction. The display function was forgotten and the building lapsed into the conventional usage of an office building. Although the Department of the Interior moved out in 1917, the Patent Office continued to occupy it until 1932, when the Civil Service Commission moved in.

In the 1930s the massive granite steps of the south wing were removed and the plot of ground on which the building stood was cut back to allow F Street traffic more space and convenience. The projection remains on G Street, where traffic must bend sharply to go around it.

Worse than the truncation of the lot was the proposal put forward in H.R. 6542 in 1953, permitting the General Services Administration to raze the building and replace it by private enterprise for the parking of motor vehicles "for the convenience of the business community and its patrons and customers." The preservation of the building owes much to the efforts of David Finley, whose Commission of Fine Arts supported his attempt to reserve it for use as a national portrait gallery to be administered by the Smithsonian Institution.

When the threat to the Patent Office Building arose, Finley, with a supporting resolution of the Commission of Fine Arts of March 25, 1955, in his pocket, visited the GSA administrator but found him "unsympathetic to the preservation of the old Patent Office." He thereupon went to the White House to see President Eisenhower, who came out strongly in favor of preserving the building. With this support, Finley was able to reverse the seemingly inevitable tide of events. After a year or so of negotiation, the Smithsonian and the GSA jointly announced the preservation of the building and its eventual transfer to the Smithsonian Institution.

How has the Smithsonian utilized the building? First of all, the structure has been divided between two of its bureaus: the new National Portrait Gallery, whose claim was so eloquently put by Finley, and the older National Collection of Fine Arts which, following the creation of the National Gallery of Art by the beneficence of Andrew Mellon, had lived a moribund existence among elephants and dinosaurs in the Smithsonian's Natural History Building. Both bureaus have separate mandates and separate directors.

The NPG maintains exclusive occupancy of the handsome early south wing and the NCFA of the last-built (and rebuilt) north wing. East and west

wings are divided. The NCFA maintains the top floor of the east wing: the so-called Lincoln Gallery, a vast columned space running the length of the building (nearly 300 feet), while the two bureaus share other space such as the library, which occupies the top floor of the west wing, a conservation laboratory, two small meeting rooms and underground parking.

One of the principal features of the building as built (and rebuilt following the fire of 1877) was the use of large sky-lighted galleries on the top floor. Since examination of patent models and museum objects was one of the principal uses of the building, great attention was paid to light. On three of the four wings great skylights existed. In the vaulted Lincoln Gallery, light was provided by four circular skylights in the roof and by numerous tall window openings around the hall. Those responsible for the renovation were unaware of the original use of the four circular openings because of the inadequate and incomplete research report supplied by the Smithsonian. None of the skylights, except a small circular one in the south wing, has been retained.

The portrait gallery has converted the third floor Model Hall, formerly the focal point of the building, into a visual storage and reference area. Offices built into this area during a renovation authorized in 1883 and completed in 1885 have been retained for gallery staff members.

The 1880s renovation by Adolph Cluss and Paul Schulze, architects of the Arts and Industries Building of the Smithsonian, indulging the late 19th-century liking for colorful Italian marble, created a 40x60 foot "marble hall"—primarily simulated marble or marbleized plaster—leading to the exhibition of the patent models. The NPG has, unfortunately, altered this space by installing elevated walkways to provide for easier access from the mezzanine areas on both sides of the open, two-story hall.

Topping the entry hall was (and is) a molded ceiling, panelled in a variety of forms around an octagonal oculus or skylight 20 feet in diameter, glazed with borders, sides and centerpiece of colored cathedral and embossed plate glass. This inner skylight, protected by a conventional outer skylight on the roof, provides the only natural light still entering the building from the skyward side. The contrast between the warm light that still enters through the oculus (which also contains artificial light sources) and the grim depressing artificial light that illuminates the areas on either side of the entrance hall is startling. Since the top floor is not intended for general public viewing, the depressing air can better be

Elegant, cantilevered staircases greet the visitor inside south entrance, sweep up to the third-floor Marble Hall.

Marble Hall, which in fact has scagliola process columns.

borne, but at the same time one regrets that what Professor Anthony N. B. Garvan of the University of Pennsylvania calls "one of the most interesting and nationally significant centennial interiors in America" should be lost to the viewing public.

The NCFA has concentrated much of its exhibits punch in its great top floor Lincoln Gallery, its groin-vaulted ceiling supported by 32 marble pillars.

The name of the gallery derives from its being used, in 1865, for Lincoln's second inaugural ball. Guests entered through the south portico, ascended Mills' curving double staircase to the great Model Hall, then promenaded through the East Hall (the Lincoln Hall) until they reached the North Hall which was used for dancing because, before its destruction in the 1877 fire, it was 100 feet in width. A midnight supper for the invited guests was served in the West Hall.

The great gallery now named for Lincoln was the result of a change of plans, a change which cost Mills his job.

Elliot's plan had been restricted to the exterior design of the original building. Two wings, conforming in appearance to Elliot's building, were designed by Mills in the late 1840s following congressional authorization to meet the needs for space for the Department of the Interior, under whose control the Patent Office was placed in 1849. (The new wings were ordered made in marble, not free or sand stone.) The Secretary of the Interior allotted the proposed east wing for the use of his department, and Mills' specifications for the work called for office rooms throughout the wing. The west wing was allotted to the Patent Office.

Although work commenced on both wings in the summer of 1849, work on the west wing was halted on September 29 by the Senate Finance Committee when appropriations to carry through both wings could not be provided. Work on the east wing continued. After personally inspecting the site soon after his appointment as Secretary of the Interior on September 12, 1850, Alexander H. H. Stuart ordered provision to be made in the east wing for the needs of the Patent Office, a decision which resulted in the conversion of the proposed top two floors of offices into one huge gallery which would be adjacent to the large top floor display gallery in the south wing.

The change of plans forced Mills to order the modification of the already built series of arches and piers designed to support the upper floors. He prevailed upon the contractors to make the changes on the promise that the extra expense would be fairly compensated.

The speed and informality with which the alterations were made led, early in 1851, to accusations of impropriety in the construction of the building. One William Archer wrote the Commissioner of Public Buildings, William Easby, in January and again in March of 1851, complaining that the wings would cost $1 million—far in excess of the estimates—and would be "a triumph of deception, and Crime, over the will of the nation, and a burlesque on the Taste, and judgment of the Administration and of the Age."

There followed a series of investigations ordered by the Commissioner and by the Secretary of the Interior. The investigation and report of Thomas U. Walter, Ammi B. Young and Robert Brown of June 6, 1851, was the final blow. Their report to Easby, who had asked them to examine the east wing, then being constructed, and report on the "sufficiency of the walls to sustain the arches about to be constructed over the third story," concluded that the strength of the structure was "greatly impaired" by the introduction of chimney flues behind the marble piers designed to support the arches of the third story. They recommended that the piers be taken down, the flues filled up and the piers replaced in their existing position. They also pointed out that the flues in question had been carried up, in the cross partitions of the lower rooms, as high as the third

Lincoln Gallery, still with marble floor, adorned vaults.

story floor, and had then been carried horizontally to the outside wall, a practice which they regarded as weakening the structure while at the same time rendering the flues "entirely useless." They recommended that alternate flues be made in the "intermediate piers" which received none of the weight or thrust of the arches. "If such an alteration is properly made," they concluded, "and the arches securely tied with iron to prevent the lateral thrust from being resolved on the outside walls, the undersigned are of opinion that the said walls will be sufficient to insure the permanency of the structure."

The report of Walter's committee spelled *finis* to Mills' career at the Patent Office. Already, in May, he had heard rumors that he was to be removed and had written Easby demanding to know the grounds and the authority upon which such action was contemplated.

Easby, a personal friend of President Fillmore's, who owed his job to that friendship, let Mills know in no uncertain terms that he no longer enjoyed his (Easby's) confidence.

Now, with Walter's report in hand, Secretary Stuart, Easby's superior, on July 29, 1851, wrote Mills to inform him that "Upon consultation with the President, it has been concluded to put the future operations in regard to the erection of the additions to the Patent Office under the supervision and control of Thomas Walter." Mills was told that his services were no longer required.

On September 3, 1851, Edward Clark was appointed "Assistant Superintendent of the Wings of the Patent Office Building" to act under Walter's direction.

The existing iron tie-rods linking the arches in the Lincoln Gallery were thus not simply an esthetic decision consciously and deliberately planned by a single architect as a way of meeting the engineering requirements of the space he had designed. Rather, they are the result of a succession of changes: in the authorization for the wing by the Congress; in its planned utilization by the Executive; in the design by the architect, Mills; and in the execution of the design by Mills' successor, Walter, to solve the problem of the great weight and thrust exerted by the two-story exhibition hall placed over piers and walls designed for a more conventionally constructed building.

The Patent Office Building, whose history is now undertaken by my colleague Harold Skramstad, catalogues the evolution of American building technology in the 19th century. Mills, in the 1830s, used hydraulic cement for the vaulted interior galleries of the south wing, with spectacular results both in terms of speed and durability. Walter, in 1849-52, used iron tie-rods to stabilize and secure the east wing. For the west wing (1852-56), Walter created a truss roof with tie-rods, rafters, braces and struts of iron. Edward Clark, architect of the north wing (1856-67) followed Walter's lead in the use of the supposedly fireproof structural iron. His floors were composed of iron beams with segmented brick arches between them and the roofs supported by iron trusses. To the surprise of all concerned the oldest portions of the building survived the fire of 1877; the newest portions failed.

The question of how to use the great space made available to the NCFA was not easy to answer. Competing views within the Smithsonian saw the space variously as a simple container for pictures, a series of viewing experiences in which a mood or context was provided for the paintings, a reception hall serving some of the features used during Lincoln's inaugural ball, and the like.

Related to all these points of view was the question of the permanent or temporary nature of the installation. Fortunately the space was not turned over in toto to satisfy the assumed exhibit "needs" of the collection. A museum building has a purpose larger than that of housing the collection it contains, as Frank Lloyd Wright's Guggenheim Museum in New York demonstrates. Despite the client's self-righteous assaults on Wright's building, it has successfully resisted emasculation. A building has uses that its users cannot dream of.

The Lincoln Gallery has, fortunately, not been converted to meet current requirements for the

Gallery with terrazzo floor, plain vaults, but revealing its graceful shape, and today, with panels blocking the view.

hanging of paintings and the display of sculpture. The purity of the hall itself, whether regarded as a work of art or a technological accomplishment, has not only been restored from the neglect (dozens of layers of hideous government green paint over the marble pillars, etc.) of years of insensitive occupants and rescued from the intrusion of an elevator shaft and duct shaft which had ruined the symmetry of the hall, but has been preserved as an expression of beauty in its own right, not merely as a slave to contemporary fashions in the display of works of art. (One might question, however, the painting over of the deteriorating design which once decorated and defined the vaults not only in the Lincoln Gallery but in the galleries of the lower floors of the south wing. The eye is now drawn first by anemostats placed at the apexes of the vaults.)

Once the decision to preserve the spatial integrity of the great hall had been made, the need for a temporary, flexible exhibit scheme became evident. That scheme was the product of Bayard Underwood, AIA, architectural consultant to David Scott, director of the NCFA.

A number of variously colored velvet panels with mahogany borders supported by metallic pedestals provide hanging space for the paintings. These panels can be manipulated to create space for large, wide pictures crossing two or three of the panels, or for small pictures, two or three of which can sometimes fit on a single panel.

The problem is that the large standardized panels form a bulk that breaks up the easy flow of the eye throughout the great hall. Only down the center aisle, between the two interior rows of marble pillars, can one sense the free sweep of the hall. The designer and director are aware of the less than adequate results, but because of the conditions under which the installation had to be made feel that there was no logical alternative.

Nevertheless, consideration might have been given to exhibit solutions that would have emphasized more effectively the purity and openness of the hall. To achieve such an effect it would have been necessary to ask: To what extent does a painting need a background or a frame?

Frank Lloyd Wright tried to get away from the flat wall mentality in his Guggenheim Museum. Possibly the Lincoln Gallery could provide a similar experiment in perception by allowing the paintings themselves to "float" in the great space by a judicious use of the existing iron tie-rods as supports. The tie-rods would not support the heavy panels but they could support the pictures mounted less massively. Confusion and weakness might have been the result of hanging paintings without the present backgrounds, but I suspect that a more imaginative approach (e.g., simple wire supports from the tie rods, or transparent glass panels, if cost permitted) could have been followed, which would at once provide a greater view of the broad sweep of the hall, a more comprehensible 20th-century use for the disconcerting 19th-century tie-rods and a saving of the cost of the present panels. The iron tie-rods "disappear" to some frequent visitors; to the fresh visitor, the hall seems to be dominated by them and by the panels.

Granite Gallery reveals strength of interior construction.

The handsome vaults of the ceiling will eventually be graced with chandeliers; long-range plans see greater use of sculpture and other elements which will further enhance the beauty of the room.

Though concealed artificial light bathes the exhibit area, the daylight visitor may still see the works of art under the natural light coming in through tall windows on all sides of the hall. Interior shutters (not all in working condition) which had existed in the windows and which might have served to vary and control the light, were eliminated in the renovation. Venetian blinds provide the only control for the light at the moment, but as funds become available, fine mesh cloth, as used in other galleries of the NCFA, will be added to provide a more gentle diffusion of the light. Backlighting problems exist, of course, since no effort was made to redirect or rechannel the natural light sources. Worst of all, no attempt was made to open the four circular skylights. Nevertheless, the hall is one of the most impressive art-viewing spaces in Washington.

Natural and artificial light are also successfully integrated in the Granite Gallery on the first floor of the northwest corner, where short, heavy columns, mammoth lintels and low vaults reveal the strength of the interior construction of the north and west wings. The NCFA has wisely retained the windows. A variety of mesh cloth curtains on each cause a pleasant, diffused and relaxed light behind the sculptural pieces that grace, in changing exhibits, this wonderfully powerful gallery. Artificial spot lighting from fixtures on rails on the ceilings gives the direct and concentrated light required by most pieces of scultpure. The designers of the hall had hoped to recess the rails into the vaults, but the thinness of the mortar cover made such an operation difficult. More paint on the fixture rails would have con-

cealed the harsh intrusion of the fixtures, but technical considerations (fire hazards and the like) have apparently ruled this out.

The NCFA's utilization of artificial and natural light, and the techniques and fixtures with which they are related to the contents of the museum, seem superior to similar uses in the portrait gallery. The bulky, elongated suspended troughs in which most of NPG's lighting fixtures are concealed—necessary to accommodate the client's demands for both incandescent and fluorescent light—tend to violate the arches of the noble sandstone gallery on the second floor of the south wing and to overwhelm the small individual galleries (originally designed as offices for clerks in the Patent Office) on the first floor. The original fenestration has not been tampered with, but the light provided from this source has for the most part been shut off by Venetian blinds and plays little part in providing light to the paintings.

Vinyl asbestos tile floors in work spaces and terrazzo, ceramic tile and wood in the exhibit areas have partly replaced the original marble floors. Careless and arrogant renovation by electricians and other workmen over the years destroyed most of the magnificent marble floors which might have provided the culminating touch of elegance and durability had they survived. In many cases the marble squares could easily have been removed and replaced to accommodate the changes required, but they were not. The firm of Faulkner, Stenhouse, Fryer & Faulkner of Washington, D.C., architects for the renovation with Waldron Faulkner, FAIA, in charge, had to take a building that had been virtually vandalized and restore it to health.

While the results in some specific details can be faulted, the achievement, in general, is impressive. Under difficult financial and administrative restrictions imposed by the government, an ancient building has been completely modernized and successfully adapted to new uses.

A great effort has gone into organizing, furnishing and decorating the spaces used by NPG officials and by the commission which oversees the work of the gallery. Much of this effort is the product of the late Victor Proetz, who served as consultant to the gallery director concerned with the completion of the interior.

The effort expended has been faulted by some as excessively contrived and precious, but the result reflects a particular outlook and personality and is not, for the most part, in the public spaces of the gallery. The effort in the private spaces has been to create both an intimate homelike atmosphere and a feeling of dignity.

The Patent Office Building surrounds a noble courtyard measuring 113x260 feet. It includes two tall elms and paved walkways in a symmetrical design and at present displays large metallic stabiles.

The space is of little use in Washington's climate, being too hot in the summer, too cold in the winter. Suggestions were made at the time the Smithsonian acquired the building that the space be covered by a translucent dome or skylight of some sort—possibly one that opens and closes—in order to maximize its use the year around.

The advantages of the covered courtyard are great. It could provide space not only for large outdoor sculptural pieces and stabiles but for indoor sculpture and works of art requiring greater protection from the elements. It might even encourage new art forms, especially painting in three dimensions which could be suspended in the cube of space and viewed from above and below as well as from the side. The possibilities are multifarious and can still be realized.

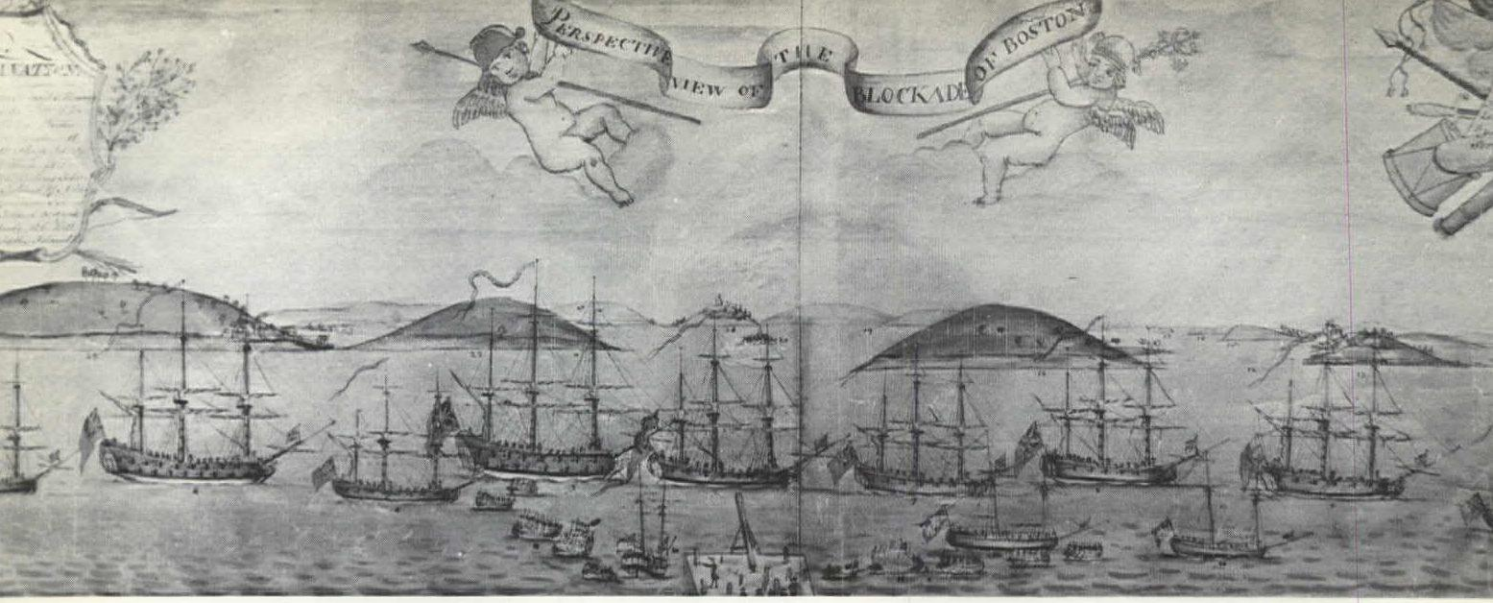
In addition, the space could serve as a flexible auditorium with seats, stage and lighting arranged according to type of presentation, time of day or night and season.

A significant historical footnote to this idea is Montgomery Meigs' 1885 proposal to provide additional usable space in the building by constructing an exact duplication of his Pension Office roof over the Patent Office courtyard. His plan was traced from that of the Pension Office, with dimensions and scale altered to conform to the slightly different interior dimensions of the Patent Office Building.

It is well that the NCFA and NPG are housed in an important and esthetically pleasing building. Neither collection can yet stand on its own feet; both need the support of an enveloping work of art. But the danger that the two collections may fall into the customary museum habit of embalming the past on the one hand, or on the other chasing after popular acclaim, is great. The pressures of the great and powerful, of the social elite and of the mass culture audience create the possibility of this distortion as does the weight of an entrenched museum bureaucracy. The working artist, the working scholar, the distinterested connoisseur are too often ignored by the forces that control the art museum establishment in this country.

Nevertheless, the existence of a building which has a validity and purpose greater than the objects it will house gives hope that it will become not only a center for display but a center for thought.

It is possible that the new Fine Arts & Portrait Galleries Building will give art history, and perhaps art itself, a long delayed birth in Washington, on the spot where a previous generation honored and studied America's scientific and technological achievements. □



HARBOR GATEWAY TO AN

Even if it shouldn't be selected for a world exposition in connection with the nation's 1976 bicentennial celebration, Boston is bound to figure big in the event. More so if a luminous past is teamed with a close-in, far-out city.

BY JOHN E. NICKOLS

It is generally agreed that society must learn to live without war, that conflict between nations has become a threat to human existence. But there is no agreement on how mankind is to live save that the mass of civilization will exist in cities. Society is faced with a dual problem: How to terminate the death threat of war? How to construct a human environment?

We have seen the sciences and technologies, stimulated by World War II, turning their energies toward the exploration of space. We have seen a frightening competition of ideologies becoming a race to be the first to get a man on the moon. But before the first earthling could be prepared for the journey, new and larger problems began to crowd the astronauts from the nation's newspapers.

Thousands of Americans, not satisfied with a promise of victory over the Russians in the contest to explore the lunar craters, grew restive and began to march and demonstrate. And the demonstrations became more and more violent. Clearly the greatest problem facing the nation was here on earth. It was, and is, a question of what to do about the millions of people who are crowded into our cities and unable to share in the prosperity of the scientific revolution.

Aerospace industries were invited to participate in the solving of the problems of the cities, and for the most part men accustomed to the finite problems of mass, power, speed and distance found themselves bogged down in problems of infinite variables. Early experiences with the problems of the cities brought a proper humility to those accustomed to simpler undertakings.

Architects, at first fearful that they would be pushed aside by men skilled in the use of the new techniques and the new electronic machines, began to take heart. Younger students and more adventurous practitioners began to learn something of war- and space-nurtured technologies. They discovered systems analysis, the computer, the mathematical model. At the same time, scientists began to reappraise the work of architects, planners, politicians, sociologists—of professionals who deal with imprecise social data.

The author: An architect with a longstanding interest in urban affairs, Mr. Nickols is chairman of the Committee on the World's Fair 1976 of the Boston Society of Architects AIA. Among positions he holds in education is that of head critic at the Boston Architectural Center where he is in charge of a student group doing research related to the problems of Boston Harbor.

Now we appear to be moving toward mutual understanding and cooperation: Humanists and technologists have gained a respect for the methods of their opposite numbers. The defense-aerospace industries are envisaging expanding markets in solving the massive problems of our cities. The traditional professions, concerned with the planning and construction of the urban environment, are seeing the possibilities of employing new and highly sophisticated problem-solving techniques.

Against this backdrop of sociological and technological change appears Boston's proposed multi-billion dollar research and development project to study the social and technical problems of cities. Now in its early planning stages, it is a scheme that promises to bring to bear on urban problems the skills of the educational and research community of Boston-Cambridge along with the capabilities of the aerospace industry. (Aerospace firms after a tour of the site expressed high interest in the planning.) It is a proposal to turn the sword of war- and space-oriented science into a plowshare of peace.

Following a period of World War II-fostered activity in Boston harbor—shipbuilding, ship repair, military activity in general—the waterfront resumed the decline that had set in years before. Decaying piers, sagging warehouses and rotting piles told of the condition of the

once world-famous seaport. Facilities constructed in the days of the clipper ships stood as idle ghosts of the past. Passenger and freight business turned from sea to burgeoning highway.

Interstate 128, Boston's circumferential highway, was constructed to relieve congested city traffic. Promptly the post-war electronic industry grew up alongside the highway, filling the abandoned farms and woodlands, draining energy from the declining core city. And with the growth of new industries and related research and development organizations, a new class of affluent scientists and technologists took root in the new suburbia. The decay of the City of Boston was further deepened.

A significant change took place in Boston beginning with the election of John F. Collins as mayor and the appointment in 1960 of Edward J. Logue to the position of administrator of the Boston Redevelopment Authority. The two of them set about to reverse the trend of disintegration in Boston. A "General Plan for the City of Boston 1965/1975" was prepared.

Old Scollay Square, haven of generations of fun-seeking servicemen, fell before the swinging ball. In place of the burlesque theaters, tattoo parlors, shooting galleries and cheap hotels, new government buildings arose. Boston would begin with a facade of respectability in the form of new civic buildings, and vast areas of the city would be renewed. This was the era of President John F. Kennedy, the beginning of a romance between university intellectuals and politicians.

The promise of projects of great magnitude tempted architects, who formerly wouldn't have been caught dead in City Hall, to stir for a piece of the action. Participation in the rebuilding of Boston became respectable.

But all did not turn out well in the "New Boston." Rising costs of building added to the inclination of the new breed of entrepreneurs, the "developers," to construct high income properties and militated against the natural interests of the low income resident. He often found himself priced out of the market.

Urban renewal may have improved the appearance of the old neighborhood and added to the city's tax base, but a high-rent apartment with attached parking garage, liquor store and swimming pool isn't much consolation to a fellow forced to move into a house no better than his old one and in many cases more costly.

To the surprise of some politicians and planners, a lot of residents living in the rundown parts of town liked it that way. If the living wasn't easy it was at least inexpensive. One outraged resident of the Charlestown section of Boston explained his opposition to renewal at a public hearing: "I'm poor and I've got a right to be poor. I'm going to stay poor and I've got a right to stay poor."

This fellow and thousands of others exercised their option in the mayoralty election of 1967. Logue, having entered the race in an effort to continue his work (his old boss, Mayor Collins, had stepped out of Boston politics to unsuccessfully seek the nomination of his party for the US Senate) was roundly defeated. He came in fourth.

Collins and Logue withdrew from Boston politics slightly bruised, each finding uncertain shelter in academia. The former mayor withdrew across the Charles to the Massachusetts Institute of Technology where he occupies the chair of Visiting Professor of Urban Affairs; Logue lingered for a time as a professor of similar title at Boston University before his departure to serve the State of New York.

The victor in the mayoralty race, Kevin H. White, inherited the problems of a large American city: an educational system torn with racial strife, a rebellious police department, a rising tax rate, an inadequate tax base and a $4 billion redevelopment program. He also fell heir to a proposal made even before the advent of the BRA—that is, that the approaching 200th birthday of the United States of America be celebrated in Boston with a world exposition.

An office, which is now called Expo Boston, was established to promote the exposition effort, and the Chamber of Commerce was very much interested in the idea. The Chamber engaged the Arthur D. Little Corporation to make a study which concluded that the fair should be situated on a site in Boston Harbor.

This thrust the Massachusetts Legislature onto the scene. The harbor site implied the use of tidelands. And the Legislature controls construction in tidal areas. The projected fair had grown beyond the scope of the City of Boston and the BRA.

But investigations revealed that large expositions are costly; seldom are they money-makers. Moreover, fairs have connotations of frivolity and gaiety, temporary and shoddy construction, time and money wasted. In an age that was becoming increasingly sensitive to the need for large expenditures of money to house the urban poor, to build schools, construct fire and police stations and rehabilitate public transportation systems, this was no time to be planning a whopping big

URBAN FUTURE?

party. Cautious leaders, business and political, began to take a second and critical look at the plans.

All was not bleak, however. Another concept emerged during the years that fair planning had been unfolding. Not so much a plan as an idea, it evolved at the Boston Architectural Center in 1962. A group of students, seeking an alternative to the sprawling growth of Boston into the suburban areas, undertook to plan a new community in Boston Harbor.

They decided upon an initial unit for 50,000 persons; they would utilize the more shallow waters of the bay and the islands of the harbor. Scale models and drawings were completed. In 1966 Robert H. Quinn, then majority leader of the Massachusetts House of Representatives, wrote to the Boston Architectural Center requesting information concerning the study. He had "filed legislation requesting the establishment of a special commission to study the islands of Boston Harbor and the surrounding shoreline."

This overture led to a series of meetings between John F. Houton and John M. Moran, representatives of the majority leader; and James I. F. Matthew, director of Expo Boston; Martin Adler, BRA planner for the fair; and representatives of the Boston Architectural Center. It was clear that planning for both a world exposition and a new urban community had much in common.

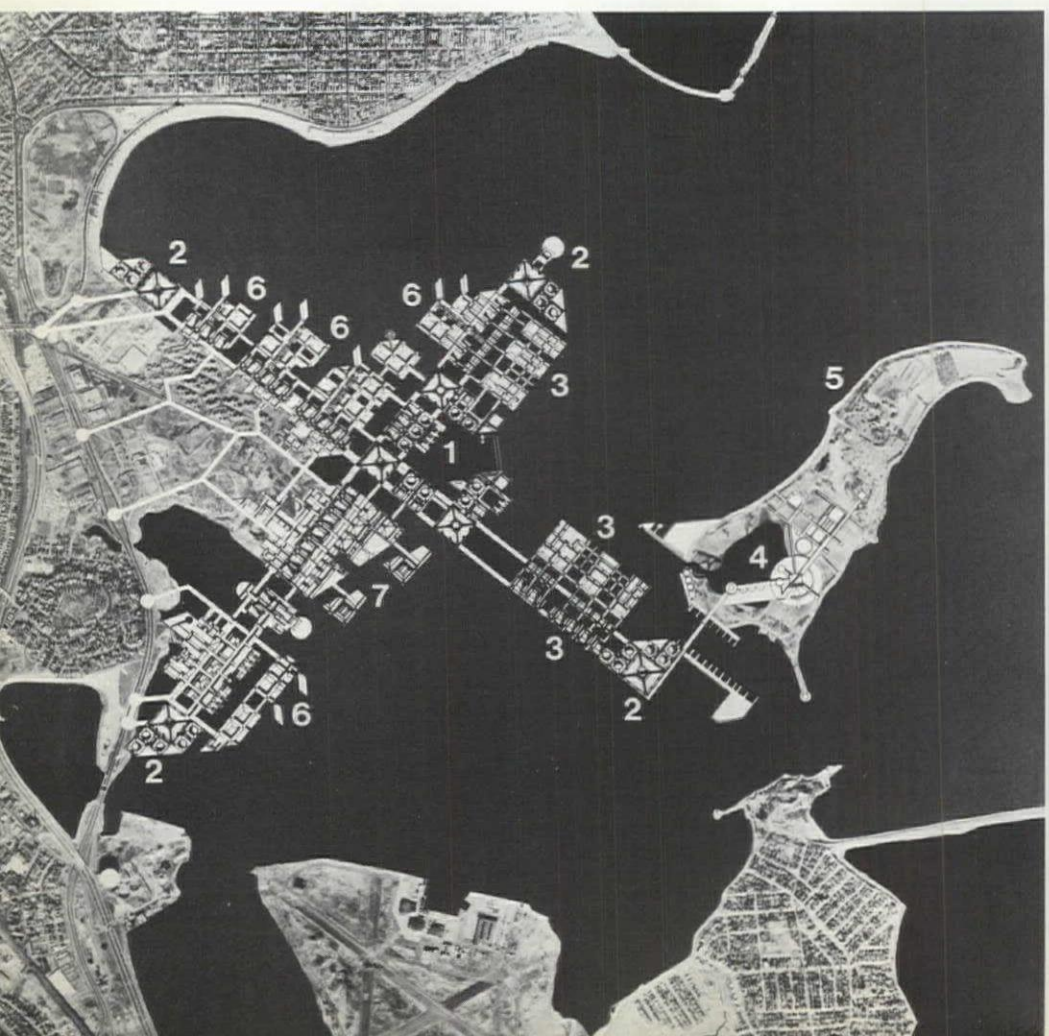
The long range plan of the BRA was scarcely a year old. Planned to direct the growth of the city until the year 1975, it did not provide for major development of the harbor region. The harbor and the islands were largely ignored in the plan—urban renewal being preoccupied at the time with the demolition of old housing; we were getting rid of "urban blight."

What had made the difference? Why had the harbor and its islands begun to attract the interest of the planners and the politicians? The answer was obvious. Here was a virtually uninhabited area which included 31 islands and which was close to the heart of the city.

The expansion of Greater Boston inland from the sea in the years following World War II, as in the other cities of the nation, had slowly built up a resistance to urban growth and movement. Land values in suburbia had risen tenfold and more; zoning had become restrictive; population growth had begun to overwhelm the facilities of the small communities. There was a persistent cry that the central city could not solve its problems of physical expansion.

Added to this, the poor people of the central city had begun to offer powerful resistance to the demolition of their neighborhoods. They were angered at seeing their homes destroyed to make room for luxury apartments. They had begun to picket, to march and to riot. The politicians were not unmindful of the significance of the uprising.

But there was a way out of the predicament. There was a way to have renewal without the demolition of old Boston, or if there was to be demolition, to have it *after* the construction of new facilities.



Expo Boston plan, left, by the numbers: 1. Water plaza / theme center. 2. Theme subcenters. 3. Exhibition areas. 4. Recreation/amusements. 5. Open space. 6. Housing. 7. Institutional. Respective post-fair uses of Nos. 1-3 are water plaza/regional center, institutional/community centers and housing. Re-uses for Nos. 4-7 would be the same. At right: new urban housing concept of Expo Boston, above, and below, theme structures in which designers envision multilevel uses both during and after the exposition has ended.

We could build first, then demolish or rehabilitate the old. The startling statistic that, nationwide, redevelopment has destroyed more low rent housing than has been constructed, was not lost upon the politicians.

It is no coincidence that the decision by the BRA in the summer of 1967 to undertake a crash program to study the design of a new community in the harbor area came into being as the wave of resentment against demolition was building up in an election year. Renewal through demolition and reconstruction was a failure. The suffering that relocation brought was more than the urban dweller would tolerate.

With roughly half of the population of the Commonwealth of Massachusetts settled in the region of Greater Boston, the affairs of the City of Boston are also the affairs of the state Legislature. Legislators were not unmindful of the growing power of the City of Boston through the BRA and its 600-plus professional and technical employees and its announced plan to guide the spending of $4 billion in 10 years. Logue had a good thing going.

Robert Quinn had been rising in the political world from the position of majority leader to that of speaker of the Massachusetts House. His Dorchester legislative district was the site of the proposed world exposition. More than that, he had a deep interest in the harbor from a lifetime at its edge.

Quinn was instrumental in setting up the Harbor Islands Commission, an organ of the State of Massachusetts empowered to study the harbor, the islands, the shoreline of Boston and the Neponset River.

Boston Harbor is not the sole possession of the City of Boston. As Boston is said to be less of a city than a state of mind, Boston Harbor is more than the port of Boston. The harbor is 50 square miles of water, more than a 1,000 acres of islands and protruding rocks and 180 miles of tidal shoreline. The waters of Boston Harbor splash the shores of Winthrop, Quincy, Weymouth, Hingham and Hull.

The Harbor Islands Commission last year turned for guidance to the community of scholars across the Charles in Cambridge. A group of MIT faculty members representing the disciplines of law, engineering and planning was organized as the Harbor Study Group. The group made a broad study of the harbor islands and the expanse of water surrounding them. It concluded that these little-used resources have the potential to yield rich benefits.

An area twice the size of Manhattan, the harbor and its islands are little known to the inhabitants of the metropolitan region. Neither the Commonwealth of Massachusetts nor the harbor area cities and towns has regarded it as a resource worth conserving. But now, the Harbor Study Group says, a transformation is beginning in the community's perception of the harbor space.

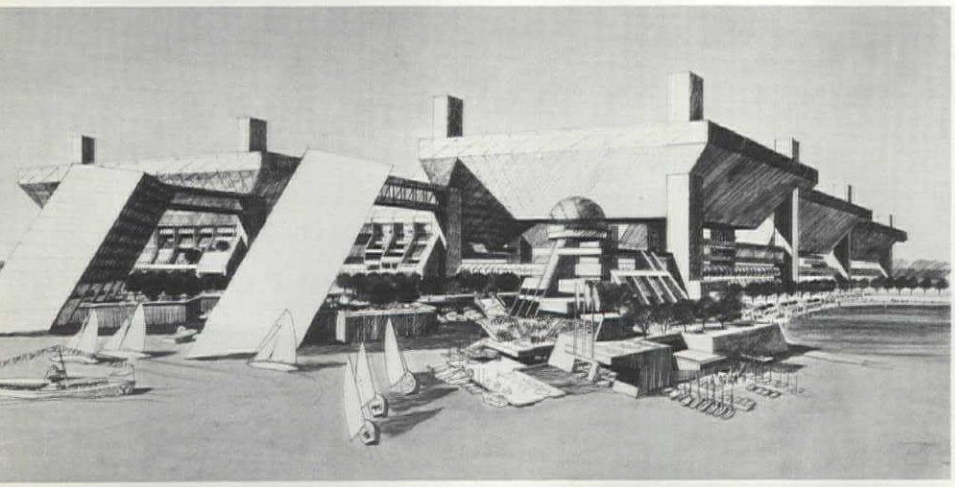
The recent removal of a Nike missile base from the harbor's 213-acre Long Island, which is also the site of an aging City of Boston Hospital, marked the end of more than three centuries of military duty for the islands of Boston Harbor. It was the unusual combination of a deep-water bay, sprinkled with numerous islands suitable for military defense, that first attracted the settlers of Boston in the 1620s.

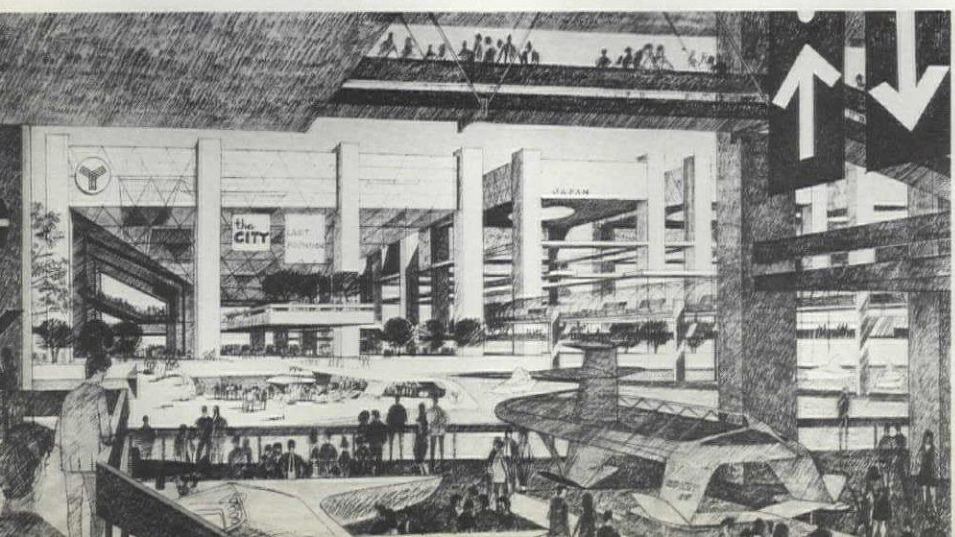
An important factor in the decision to study new uses for the harbor and its islands was the demise of this defense system, a semicircle of islands looped about the waterfront and providing a natural fortress against attack by sea. The phasing-out of the last of the military installations took place almost unnoticed. Not until new uses for the islands were contemplated did it become obvious that their historic reason for existence had ended.

The major importance of the harbor has, of course, been economic. The port of Boston was one of the great seaports of the world for two centuries. A steady decline in the relative standing of the Boston port in this century has left the harbor in an uncertain position.

An almost complete lack of concern for the harbor and the islands is demonstrated in the steady deterioration in the quality of the harbor waters. The discharge of sewage, waste from misplaced harbor industries, oil spillage from tankers, etc., have combined to produce a pollution level that effectively blocks the development and realization of the true potential of what is still a scenic area.

A listing of the principal uses of the islands, aside from military defense, is indicative of public regard for the area. For many years Spectacle Island was the site of a rendering plant for the disposal of dead horses, a lively business in the days when Boston was run by horse power. Later the island was used as a general disposal area, a burning dump. Deer Island houses





a county jail and a close neighbor to the jail is a sewage treatment plant. Moonhead also accommodates a sewage plant.

As the City of Boston turned from ocean commerce, the port changed gradually from an entrance to a back door, a collecting place for garbage and debris—a dumping place. Property values declined along the waterfront. Marginal industries gravitated to the cheap real estate.

Not all of the harbor fell into disuse and decline. Logan Airport, constructed on the mudflats of East Boston, grew with the advance of air transport, ultimately spreading over Governor's Island and much of the Deer Island Flats. The noise of some 500 take-offs and landings daily adds another form of pollution to the overburdened harbor.

On the optimistic side, much can be said for the prospects of the waterfront. This large, well-sheltered harbor has been used extensively for recreation, boating and swimming, the latter, of course, confined to the beaches farthest from the sources of pollution.

The Metropolitan Area Planning Council recently completed a study and prepared a comprehensive recreational plan for the harbor which calls for the public acquisition of the islands and much of the shoreline. The plan recommends the preservation of the harbor as open space and represents, in the opinion of the MIT Harbor Study Group, an important milestone in the changing conception of the future role of Boston Harbor.

A series of current proposals for major developments in the harbor area indicates a historic change in the utilization of waterfront property, the MIT study notes. The proposals will transform land uses along the urban waterfront from low-grade commerce and industry to residential, recreational and high-grade commercial uses.

Of the many proposals for new uses of waterfront property, the group found the 1976 world exposition on the Dorchester Bay site to be the most dramatic in particular since it contemplates a re-use of the site for a large urban complex.

The BRA has concluded that the notion of a new community development in the harbor warrants serious study even in the event Boston should not be selected as the site for the bicentennial celebration.

This conclusion counters the argument of those who oppose a world exposition on the basis that fairs are frivolous, temporary and costly to the host city. The fact is, moreover, that the nature of these celebrations is changing. Unless an exposition is justified for better sociological reasons than the need for fun and games, it is no longer capable of winning strong public support.

The money must be spent in the solving of the critical problems of urban life. Having done this, at least on an experimental basis, we then have something to crow about, something to show to the world at large. We will have constructed in Boston a mammoth laboratory for the study of the problems of cities, the problems of neglected city dwellers. In an age of burgeoning science we will have established a huge facility for the application of the knowledge of contemporary science to the problems of the human environment.

At the state level of government some contend that no great loss would be incurred even if Boston is not chosen as the site for the United States Bicentennial 1976. Bunker Hill will still be in Charlestown; Concord and Lexington will not have been moved.

Tourists will come by the millions, stimulated by the publicizing of the 200th anniversary of the declaration of freedom from British rule. Added to the built-in attraction of the sights and scenes of the American Revolution in New England would be an experimental city, an urban laboratory where visitors could participate in the process of learning how to improve the quality of urban life.

The combining of the several ideas that arose independently has burdened the enterprise with some unwieldy titles. "The United States Bicentennial World Exposition, Boston 1976, New Community for Boston," a title employed in a preliminary report, is self-explanatory.

Nonetheless, it points up the process of conjoining and strengthening which promises to build up the necessary impetus to make a success of the venture. If we add "urban laboratory" to the already overburdened title, it is clear that one or more of the components of the name might be dropped off without putting a halt to the plans. There is something in it for everyone.

The BRA Planning Design Group under the direction of architect Jan Wampler has developed specific plans for the Harbor Islands Community and world exposition. The design group, made up of young designers concerned with advanced projects for the city, is part of BRA's urban design department directed by Charles G. Hilgenhurst, AIA, and Stephen Diamond, AIA. Plans and models of a preliminary version of their design were presented to the members of the Boston Society of Architects AIA in the spring of 1968. Several months later a committee of the society, after a study of the work of the BRA, the Harbor Islands Commission and the MIT Harbor Study Group, endorsed the plans.

Certain experts in the fields of conservation, pollution control and ecology fear that site planning has rushed ahead of scientific research. Speaker Quinn, who is vice chairman of the Harbor Islands Commission, had expressed an admonishment that BRA planners of the fair not overlook the fact that the harbor is a metropolitan asset and that its use ought to respond to the social, economic and political needs and aspirations of the whole community.

Planning for the harbor will be futile, believes John M. Moran, commission executive director, unless planners are aware of the political implications of their configurations. And urban designers, unaccustomed to waiting for the scientific data to support their intuitive decisions, feel that plans can grow and change in adaptive response to the democratic process of allocating the use of land.

If Greater Boston is going to play host in 1976 with an experimental Harbor Islands Community having the necessary facilities of transportation, utilities, parking, theaters, schools, industries, shops, offices, institutions ad infinitum, no time is to be lost in the preparation of preliminary plans. We can always adjust to the dictates of reality when reality is properly identified.

The minimum community of 50,000 persons represents an investment on the order of $2½ billion. There has been mention of 150,000 to 200,000 population as an ultimate size for the community. We are talking here of an ultimate expenditure in the order of $10 billion.

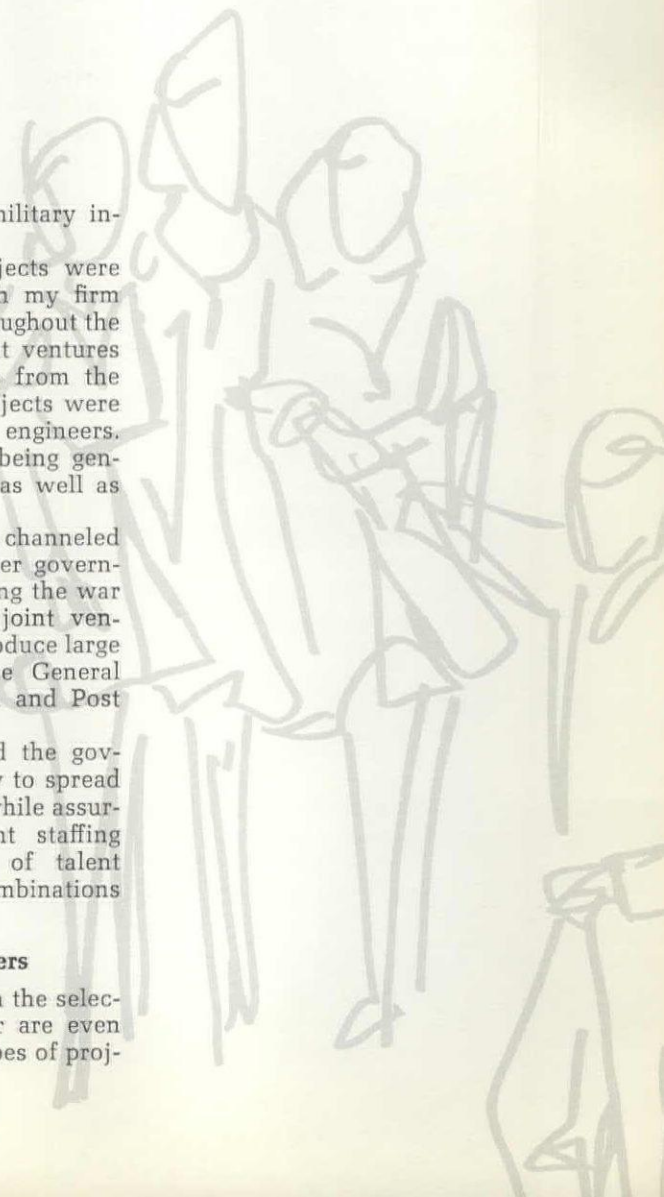
If we are to deal with architecture and urban design of this magnitude, we have to begin very early to get a concept of physical form. Otherwise we cannot start to think about it. Design cannot be a linear, step-by-step process of problem solving. We have to take great intuitive leaps to get a grasp of ultimate form. Research will carry along the necessary testing and measuring as we seek the total form of the new environment. □

"Please don't use the term 'joint venture,' " went the plea of a friend. "It's a dirty term." His firm having been involved in as many as 50 joint ventures and he himself inclining very favorably toward them, the author fell into puzzled meditation. Mr. Dibner is equally enthusiastic over square dancing. But what connection did square dancing have with joint venturing? Of course! There were indeed similarities between the two, he thought. Is there not, for one, a commonality of spirit in which each is undertaken?

"There then ensued," Mr. Dibner recalls, "a most prolonged and serious discussion in which I expressed my strong belief that the joint venture method of association can be an extremely effective way of practicing our profession with great benefit to be derived by both owner and architect. In addition to providing a mechanism for furnishing excellent professional services through competent combinations, it also has several other marked advantages. For the small firm, it provides the vehicle for doing larger work and expanding. For the large firm, it broadens its scope of service and activity. Dirty word? Why, it's clean and beautiful and as far as I'm concerned, most architects are foolish not to take advantage of this system of practice."

Choose Your Partner

BY DAVID R. DIBNER, AIA



Joint ventures—temporary contractual associations of independent firms joined to obtain a particular commission and to perform a necessary range of services — vary greatly in both their combinations of firms and in their organization.

But no matter what firms make up the association or how they organize, the combination must be formed on a logical, mutually beneficial basis if joint ventures are to function efficiently and enjoyably.

Joint ventures in my experience have been limited to several architects together, architects and engineers together, or architects and engineers together supplemented by various other professionals such as landscape architects, space planners and soils and foundation consultants.

Joint Venture Origins

These and other combinations grew from the requirements for broader services that developed during and just after World War II, when teams of professionals with complementary talents were sought to take over the architectural and engineering design, and often the construction, of large military installations.

Typical of these projects were the military jobs which my firm helped to undertake throughout the world by means of joint ventures that included architects from the countries where the projects were located along with US engineers. Such projects still are being generated by the military, as well as by major industries.

As federal funds were channeled from the military to other government operations following the war and post-war buildup, joint ventures were formed to produce large office buildings for the General Services Administration and Post Office Department.

Joint ventures offered the government the opportunity to spread the work among many while assuring itself of competent staffing through the reservoir of talent established by the combinations for the ventures.

Selecting Fellow Venturers

The ways and whys in the selection of a joint venturer are even more varied than the types of proj-

Learning to dance and joining together in the same set (four couples) helps give a group of people a feeling of cooperation and genuine oneness . . . and to give one the sense of "belonging."

Each dancer must remember that he is vitally necessary for the fun of his partner and the rest of the set, that square dancing is a group activity.

ects available. Factors influencing the choice involve the answers to such questions as the following:

• Can you alone *obtain* the commission or do you need a firm with greater background and experience in the specific field; better entree to a particular client; better proximity to the project location?

An example from our experience is the case of Eastern Airlines which wanted to build a reservations center in our area on a very tight time schedule. We provided the local know-how, manpower and management skills while a North Carolina architect furnished direct knowledge on the design of this type of installation, having done several before.

The joint venture was successful for all parties, each fulfilling his individual role and together responding to the needs of the client.

• Can you alone *produce* the commission or do you need an additional firm to provide broader services; greater depth of manpower capability; management skills; financing, etc.?

Responding to the challenge raised by this question, and in order to furnish broad architectural and engineering services in the design of NATO bases throughout France, we formed a joint venture with a US engineering firm which came in with a background of engineering experience, and with Paris architects André and Pierre Dufau, contributing local familiarity.

• Does the owner want to award the contract to more than one firm?

The James Forrestal Building in Washington, D. C., was designed by a joint venture of three architectural firms from New Orleans, New York and Newark, combined under the selection procedures of the GSA.

A thoughtful response to the foregoing questions will determine what type of association is most desirable. A more difficult matter, and one not so easily described, is the process of deciding which firm will best help complement your own.

It should be said, in this connection, that many firms are looking for the same opportunities as yours and might welcome a query regarding a possible association.

The author: Mr. Dibner, a partner in the Newark firm of Frank Grad & Sons, has directed joint ventures of many types including one for the James Forrestal Building in Washington, D. C., soon to be completed.

If a joint venture is decided on, the co-venturers must honestly and candidly discuss their goals and motivations and learn to know one another. There can be no secrets in a successful joint venture.

There must be advantages for all parties. But most important, there must be a clear definition of individual roles and mutual relationships.

Familiar Formations

As is true in most relationships, mutual understanding is the key to a successful association. The definition of relationships must start with the clear division of responsibilities; and the contract must confirm this agreement of understanding.

These relationships are set forth in such a variety of combinations that it would be inaccurate to try to generalize and too lengthy to attempt to list all of them. However, a few typical relationships can be cited:

• Each firm assumes the responsibility for turning out a specific portion of the work. When architects and engineers combine, this division is clearly apparent, as it is when a small design office co-ventures with a large production office. When the two parties are more evenly matched, they divide the responsibilities. For example, Firm A takes over the work from inception through the design development stage while Firm B starts at that point and pursues the work through completion of construction. In this relationship, each has

responsibility for only its part of the total work.

This type of arrangement, while having the advantage of limiting a firm's responsibility to only that work performed by itself, has the drawback of a possible break in continuity and complications as to clearly defined relationships with the owner and consultants.

To my way of thinking, this association is more like a relay race than a joint effort and consequently is not as effective or as potentially fruitful as other forms which require greater cooperative effort.

• All parties agree to divide the work, but from beginning to end jointly share the legal responsibilities. In my experience this is the best type of association. With this method, each firm, while not necessarily equal in contribution of effort or in extraction of profit, shares participation and responsibility fully from creation to completion. Together they operate under clearly defined guidelines of responsibility for performance of each part of the work.

The majority of the ventures in which my firm is engaged conforms to this method of organization since it is the most flexible and best lends itself to modern management techniques.

• One firm takes the position of responsibility and uses another firm for manpower and expertise in a given area. In effect, however, this type of arrangement is much closer to a prime and sub contractor relationship, complicated possibly by joint responsibilities to the owner if both firms happen to be co-signers of the prime contract.

• A continuing, loose arrangement is established by several firms for the purpose of obtaining commissions. These firms pool their resources and develop common promotion materials. They have a general understanding of how the work will be pursued after the contract is awarded. Until they receive a commission, they continue to work independently.

All Join Hands

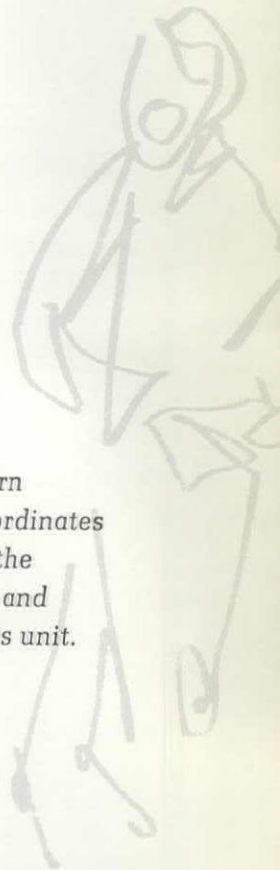
The most important element in the success of a joint venture is the understanding which must be defined at the start, and the development of an agreement to record all these relationships. These understandings should be established *prior* to obtaining the commission; it is rather late to determine if you have the wherewithall to complete the assignment after you've signed a contract to deliver the goods .

However, the problem is usually found in the enthusiasm attending efforts to jointly obtain the commission, an enthusiasm that can close your eyes to potential conflicts and unhappiness. Everything seems rosy and problems are set aside. It's a lot like getting married and it is important, at this point, to examine your prospective mate carefully before the joint venture bells ring.

The following are some of the ways which I have found best for defining responsibilities and maintaining harmony throughout the operation. Note that none of these suggestions is uniformly applicable; they are simply intended to suggest ways in which your specific situation can benefit. Above all, use an attorney knowledgeable in this type of association to draft the agreement to cover your particular requirements.

• In order to isolate and identify the division of responsibility for services, we employ a scorecard system which lists the items of architectural and engineering services required for each phase of work along with the firm having the major responsibility to provide the service. For example, the design development phase might look like the chart, lower left.

Design Development		
Responsibility: R—major, O—minor		
	Firm A	Firm B
Conferences with owner	R	R
Refinement of project requirements	R	O
Formulation of structural system	O	R
Formulation of mechanical/elec. systems	O	R
Selection of major building materials	R	O
Preparation of DD documents	R	O
Perspective, sketches or models	R	O
Semidetailed cost estimate	O	R
Reviewing plans with applicable agencies	O	R
Presentation of DD documents to owner	R	R



The caller in modern square dancing coordinates the movements of the individual dancers and forms a harmonious unit.

By assigning values to the various services and relating them to the percentage of fee for the particular phase, it is possible to anticipate the percentage of total effort to be provided by each of the parties.

• Named at the beginning of every joint venture project is a Policy and Operating Committee. Having one principal from each firm, the committee's duties consist of all major decision-making for the venture along with technical review. The committee selects a managing partner to provide leadership in technical aspects of the venture, subject to its control, and a business partner to supply the financial management skills.

• The design of the project, the area most likely to create problems especially among ego-prone archi-

Because of its natural and simple movements, square dancing is attractive to those hesitant persons who have never tried any type of dancing before. Its simplicity dispels any timidity about not being able to participate.

tects, may be accomplished by a design group consisting of members of all interested firms who in turn elect a lead designer. The group's efforts are subject to the review of the Policy and Operating Committee which has the last word.

This method keeps design efforts "in house" where they belong so that the owner is presented with only one proposed design solution. This averts a situation which I understand sometimes occurs when no design agreement is reached and the owner is placed in the unfortunate position of serving as a judge in a "competition" of different designs.

• Financial arrangements are usually patterned so that each joint venturer will be compensated for his contributive effort, sharing in the profit (or loss) according to a percentage on which agreement had been previously reached.

In larger ventures, a separate office is set up to handle the project. The overhead costs for this office are kept separately. Employees are furnished from each of the joint venture offices; and if new ones are hired, they are assigned to the payroll of a member firm.

Where the size or scope of the project does not warrant the establishment of a separate office, one or several of the members' offices is chosen for the execution of the work.

Compensation will vary as to the type and location of personnel used. Here is a typical schedule of compensation:

$25/hour — Partners' technical effort.

$15/hour — Associates' technical effort.

Salary + 20% — Technical or clerical personnel in joint venture office.

Salary + 90% — Technical or clerical personnel in home office of joint venturer.

Salary + 20% — Technical or clerical field personnel.

The rates and percentages indicated are examples only. They will vary with the scope and size of the project and the size and location of the offices. The objective, however, is to compensate the individual office for the actual expense of its contributed effort.

Additionally, all reimbursable items should be clearly spelled out.

Partners' time is usually compensated for only when an unusual technical effort is required. When partners in the Policy and Operating Committee meet for administrative or technical review purposes, no compensation is received.

An important note must be made of insurance. A joint venture presents quite a different insurance problem from that of ordinary practice. The risk is different and so is the time of coverage. But paramount is this: If a member wishes to have insurance on his joint venture he should see to it that he has a separate policy because the joint venture will not be covered under his normal firm policy. This is true even though all parties may be insured individually with the same insurance company.

Many other aspects must be reviewed and agreed to, including financing, accounting and auditing procedures; publicity; death or disability within a member firm; the joint venture name, and so on. The better the understanding, the better the joint venture.

Benefits of Venturing

Real enjoyment can be had from joint ventures. The advantages to firms both large and small are many, and with demands growing for increasing the scope of services, what better method to meet them than to create a team of complementary talents? The beauty of a joint venture team is that each participating member can retain individual identity throughout and return to his former role when it's all over, often richer and certainly wiser.

For the small firm, the joint venture offers an opportunity to get in where the action is and do some of the larger work. Upon completion, the project goes into the firm's brochure and increases the possibilities of getting another large commission.

During the operation of the joint venture the individual firms have an opportunity to exchange information, learn new techniques and reassess old skills. All this happens without putting the firm in a position of permanent change—rather, it temporarily tries its strength in a new field of endeavor.

Of course, joint ventures are not without problems, but I maintain that with proper preparation and through wise associational selection, better architecture can be produced than the mere sum of the firms' skills might suggest. The overriding theme must be a mutuality of interest leading to the highest goals of service to the client. It can work well. I know. □

Editor: *Donlyn Lyndon, AIA, School of Architecture and Planning, Massachusetts Institute of Technology, Cambridge.* **Contents:** *Toward a Theory of Architecture Machines by Nicholas Negroponte; A Curriculum Structure by John Wade.*

Toward a Theory of Architecture Machines

BY NICHOLAS NEGROPONTE

When a designer supplies a machine with step-by-step instructions for solving a specific problem, the resulting solution is unquestionably attributed to the designer's ingenuity and labors. As soon as the designer furnishes the machine with instructions for finding a method of solution, the authorship of the results becomes ambiguous. Whenever a mechanism is equipped with a processor capable of finding a method *of finding a method of solution*, the authorship of the answer probably belongs to the machine.

If we extrapolate this argument, eventually the machine's creativity will be as separable from the designer's initiative as our designs and actions are from the pedagogy of our grandparents.

The Evolutionary Machine

This discussion is not about machines that necessarily can do architecture; it is a preface to machines that can learn about architecture and perhaps even learn about learning about architecture. Let us call such machines *architecture machines;* the partnership of an architect with such a device is a dialogue between two intelligent systems—the man and the machine—which are capable of producing an evolutionary system.[1]

Certainly computers are formidable clerks. They perform well when told exactly how to do something and they can remove drudgery by doing the dull repetitious design tasks. Is that not enough? Why ask a machine to learn, to associate courses with goals, to be self-improving and to be ethical? [2]

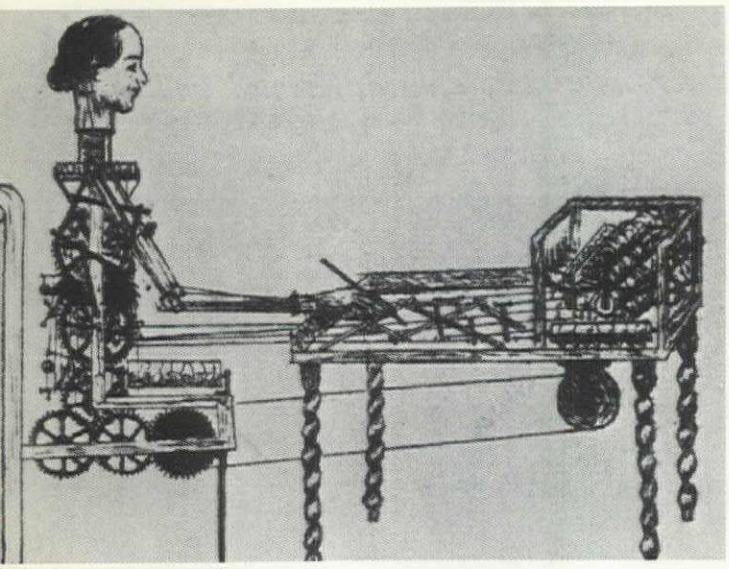
The answer is imbedded in the question. If a machine can be a self-improving evolutionary specie, it sports a better chance of making its computational and informational abilities relevant. Most computer-aided design studies are irrelevant inasmuch as they only present more fashionable and faster (though rarely cheaper) ways of doing what designers already do. And, since what designers already do does not seem to work, we will get inbred modus operandi that could make bad architecture even more prolific.

The general concern of machine-assisted architecture is twofold: First, architects cannot handle large scale problems, for they are too complex; second, architects ignore small scale problems, for they are too particular and individual (and, to them, trivial). As a result of both realities, "less than 5 percent of the housing built in the United States and less than 1 percent of the urban environment is exposed to the skills of the design professions." [3] In trying to combat these deficiencies, researchers are developing information systems, computer graphics and computing services that liberate the designer and allow him more time to do that which he really loves.

Such efforts would be meaningful only in a context where machines can learn to be adaptable and learn to be relevant. (And then these efforts might be unnecessary.) Ironically, an environmental humanism might only be attainable in

The author: Mr. Negroponte is an assistant professor of architecture at MIT. He is currently completing a book, *The Architecture Machine,* which deals with the concept of intelligent automata in design. His present research efforts are sponsored by the Ford Foundation. He is working at MIT's Urban Systems Laboratory in partnership with Leon Groisser, an assistant professor of structures at MIT.

1. This issue will be discussed at length in Nicholas Negroponte's *The Architecture Machine,* Cambridge: MIT Press, late 1969. The preparation of the manuscript has been sponsored by Joint Center for Urban Studies of Harvard University and MIT: The reader should also refer to: Warren M. Brodey and Nilo Lindgren, "Human Enhancement Through Evolutionary Technology," *IEEE Spectrum,* September 1967, page 87.
2. Warren McCulloch, *Embodiments of Mind,* Cambridge: MIT Press, 1965. The reader should particularly look at "Towards Some Circuitry of Ethical Robots," in that volume.
3. John Eberhard, "A Humanist Case for the Systems Approach," AIA JOURNAL, July 1968.



cooperation with machines that have been thought to be inhuman devices — devices that can intelligently respond to the tiny, individual, constantly changing bits of information that reflect the identity of each urbanite as well as the coherence of the city. If this is true, then the first issue is: Can a machine deduce responses from a host of environmental data?

The Learning Machine

A 1943 theorem of McCulloch and Pitts states that a robot constructed with regenerative loops of a certain formal character is capable of deducing any legitimate conclusion from a finite set of premises.[4] One approach to such a faculty is to increase the probability of meaningfulness of the output (the design) generated from random or disorderly input (the criteria). Ross Ashby stated, "It has been often remarked that any random sequence, if long enough, will contain all answers; nothing prevents a child from doodling: $\cos^2 \times + \sin^2 \times = 1$."[5] In the same spirit, to paraphrase the British Museum/chimpanzee argument, a group of monkeys, while randomly doodling, can draw plans, sections and elevations of all the great works of architecture and do this in a finite period of time. As the limiting case, we would have a *tabula rasa* realized as a network of uncommitted design components (or uncommitted primates). Unfortunately, in this process, our protagonists will have built Levittown, Lincoln Center and the New York Port Authority Towers.

Surely some constraint and discrimination is necessary if the components are to converge on solutions with reasonable time. Components must assume some original commitment. As examples, five particular subassemblies would be part of an architecture machine: 1) a heuristic mechanism, 2) a rote apparatus, 3) a conditioning device, 4) a reward selector and 5) a forgetting convenience.

A heuristic is a method based on rules of thumb (or strategies) which drastically limit the search for a solution. A heuristic method does not guarantee a solution, let alone an optimal one. The payoff is in time and in the reduction of search for alternatives. Heuristic learning is particularly relevant to evolutionary machines, since it lends itself to personalization and change via talking to one specific designer or overviewing many designers. In an architecture machine, this heuristic element would probably be void of specific commitment when the package arrived at your office. Through architect-sponsored maturation, a resident mechanism would acquire broad rules to handle the exceptional information. The first time a problem is encountered, the machine would attempt to apply procedures relevant to apparently similar problems (or contexts). Heuristics gained from analogous situations would be the machine's first source of contribution to the solution of a new problem.

After repeated encounters, a rote apparatus would take charge. Rote learning is the elementary storing of an event or a basic part of an event and associating it with a response. When a situation is repeatedly encountered, a rote mechanism can retain the circumstance for usage when similar situations are next encountered. In architecture, such repetition of subproblems is extremely frequent: parking, elevators, plumbing, etc. Again, a rote mechanism lends itself to personalization. But, unlike the heuristic mechanism, this device would probably arrive originally with a small repertoire of situations it can readily handle.

Eventually, simple repetitious responses become habits (some good habits and some bad habits). More specifically acclimatized than a rote apparatus, a conditioning mechanism is an enforcement device that handles all the non-exceptional information. Habits, not thought, assist humans to surmount daily obstacles. Similarly, in a machine, beyond rote learning, design habitudes can respond to the standard events generated by the problem, by the heuristic mechanism or by the rote apparatus. Each robot would develop its own conditioned reflexes.[6] As with Pavlov's dog, the presence of habitual events will trigger predefined responses with little effort (no conscious memory recall) until the prediction fails; whereupon the response is faded out by frustration (evolution) and is handled elsewhere in the system.

A reward selector initiates no activities. In a Skinnerian fashion, the reward mechanism selects from any action that which the "teacher" likes.[7] The teacher (the designer, an overviewing apparatus, the inhabitants) must exhibit happiness or disappointment for the reward mecha-

nism to operate. Or, to furnish this mechanism with direction, simulation techniques must evolve that implicitly (without the knowledge of the designer) test any environment. The design of this device is crucial; bad architecture could escalate as easily as good design. A reward selector must not make a machine the minion or bootlicker of bad design. It probably must evaluate, or at least observe, goals as well as results.

Finally, unlearning is as important as learning. A remark "its (the computer's) inability to forget anything that has been put into it . . ." [8] is simply untrue. Information can assume less significance over time and eventually disappear—exponential forgetting. Obsolescence occurs over time or through irrelevance. A technological innovation in the construction industry, for example, can make entire bodies of knowledge obsolete (which, as humans, we often hate surrendering). Or past procedures might not satisfy environmental conditions that have changed over time, thus invalidating a heuristic, rote response, or conditioned reflex.

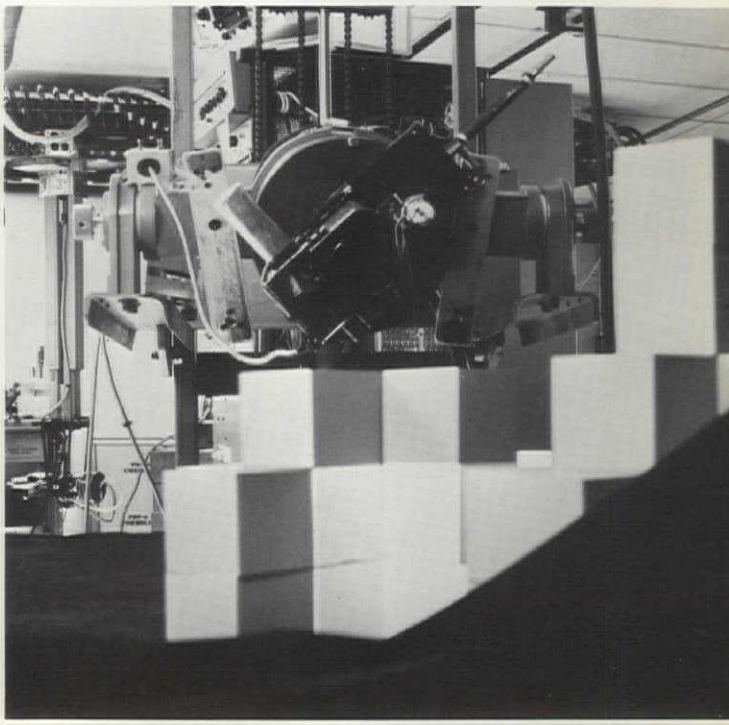
These five items are only pieces; the entire body will be an everchanging group of mechanisms that will undergo structural mutations, bear offspring,[9] and evolve, all under the direction of a steersman. Though this is not the place to describe monitoring devices or hardware configurations in detail, it is important to understand the general placement of parts. Located in residence with the architect would be the architecture machine with these five subassemblies. The machine would have local computing power and local memory and it would work 24 hours a day for a specific designer.

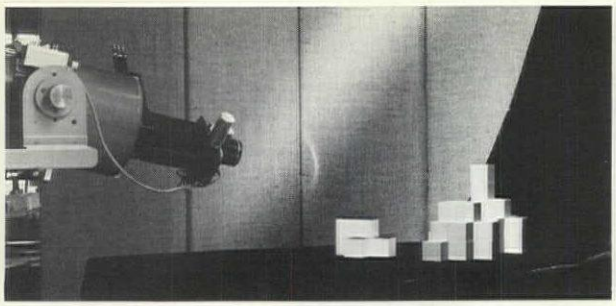
Away from the designer would be a parent machine to which all architecture machines could talk via telephone lines. This mechanism would have powerful processors and extensive memory (in the spirit of Sweets Catalogue, Graphics Standards, zoning laws, or all the demographic figures of the world). The architecture machines would talk to this parent device for three reasons: 1) to acquire large bursts of computing power, 2) to acquire stored information, 3) to communicate with other architects and other architecture machines. In other words, the configuration is one where many parts, human and mechanical, are communicating with themselves and with each other, while the consortium as a whole is somehow communicating with the real world.

The Seeing Machine

Communication is the discriminatory response of an organism to a stimulus.[10] If we are to reckon with communication, beyond formal rhetoric or syntax (be it English or computer graphics), we must address ourselves to the versatility of the

4. Warren McCulloch and Walter Pitts, "A Logical Calculus for Ideas Immanent in Nervous Activity," *Bulletin of Mathematical Biophysics*, Vol. 5, Chicago University Press, 1943, pages 115-133.
5. Ross Ashby. "The Design of an Intelligence Amplifier," *Automata Studies*, edited by Claude Shannon and J. McCarthy, Princeton University Press, 1956.
6. Albert Uttley, "Conditional Probability and Conditioned Reflexes," *Automata Studies*, edited by Claude Shannon and J. McCarthy, Princeton University Press, 1956.
7. B. F. Skinner, *Science of Human Behavior*, New York: Macmillan Co., 1953.
8. Arthur R. Miller, "The National Data Center and Personal Privacy," *The Atlantic Monthly*, Vol. 220, November 1967.
9. The concept of simulated evolution through bearing offspring is covered at great length in Lawrence J. Fogel, Alvin J. Owens and Michael J. Wash, *Artificial Intelligence through Simulated Evolution*, New York: John Wiley & Sons, 1956.
10. Colin Cherry, *On Human Communication*, Cambridge: MIT Press, 1957.





discriminating mechanism—the interface.[11] In this case, the interface is the point of contact and interaction between a machine and the "information environment." The observation channel in which we are interested is where the processors become tangent to the real world by directly sensing it or by communicating with a human (who senses it).

For a machine to have an image of a designer, a design problem, or even a so-called design solution, three properties are necessary: an event, a manifestation, a representation. The event can be visual, auditory, olfactory, tactile, extrasensory or a motor command. The manifestation measures the event with the appropriate parameters (luminance, frequency, brain-wave-length, angle of rotation, etc.). The representation is the act of mapping the information into a receptacle that is compatible with the receiving organism's processing characeristics.[12] These three properties—event, manifestation, representation—form the interface.

In an architect-machine partnership perhaps the most relevant sensory interfaces are visual. Computer graphics techniques have become the paradigm for computer-aided architecture systems[13] but beyond inputting and outputting lines, points, characters and even halftones, architecture machines must have eyes (and ears and . . .). Setting aside the phantasmagoria of robot-designers, consider speaking with a machine that sees you. In our present culture the thought is foolish or frightening. To our children it will be an ordinary occurrence. To Mortimer Taube it is offensive.[14] To Marvin Minsky it is obvious.[15]

Oliver Selfridge is credited with the founding works in machine-vision.[16] His machine, "Pandemonium," observed many localized visual characteristics. Each local verdict as to what was seen would be voiced (thus pandemonium) and with enough pieces of local evidence from these *demons*, the pattern could be recognized. The more recent work of Seymour Papert and Marvin Minsky has extensively shown that such local information is not enough; certain general (or global) observations are necessary in order to achieve complete visual discrimination.[17]

Applying the Minsky-Papert eye, it is possible to build an architectural seeing machine by developing a simple device that will observe simple models.[18] Such a mechanism is the prelude to machines that someday will wander about the city seeing the city. In such a manner, architecture machines could acquire information beyond that which they are given and therefore would have the potential to challenge and to question. Furthermore, such data-acquisition avoids the mutations of transfer from real world to designer's sensors to designer's brain to designer's effectors to machine's sensors and so on. For this kind of data, the consequent losses of information at each transfer point are bypassed.

Such research is an exercise in learning through seeing (learning only those aspects which are indeed visually representable). The machine looks at a simple block-model, attempts to recognize what it has seen (using many layers of heuristics) and then extrapolates certain characteristics (probabilities, commonalities, intents, patterns, etc.). After the first model is recognized, the machine asks for a second and then a third, until it has seen 10 block-model solutions to 10 simple problem statements. Following the 10th solution, the machine will be given an 11th problem statement and asked to generate its own solution. In this experiment, the solution will be in the vernacular of forms presented in the original 10.

Even though such a machine is more of a mannerist than a student, the exercise is relevant inasmuch as it reverses the fashionable role of computers. Currently, a great deal of concern and research effort is placed on the machine-generation of form from a given statement of criteria (a statement that usually narrows the range of goals by being a solution-oriented verbal phrasing). For the eyes of an architecture machine, the problem is the opposite; given a form, generate the criteria . . . learn from the criteria and someday generate new forms. □

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11. Extensive research has been undertaken to establish congenial architect-machine interfaces. URBAN5 is a computer system that illustrates some of the conveniences of graphical and natural language discourse. This has been reported in Nicholas Negroponte and Leon Groisser, "URBAN5," *Ekistics*, Vol. 24, September 1967.
URBAN5 is discussed at greater length in a forthcoming publication, Gary Moore (editor), *Proceedings of the First International DMG Conference* (held June 1968).
12. Stuart M. Silverstone, *Information Manipulation for the Evolution of Physical Environments*, Cambridge: Urban Systems Laboratory, MIT, Research Report (forthcoming).
13. Murray Milne (editor), *Proceedings of Computer Graphics in Architecture Conference* (held Spring 1968), New Haven (forthcoming).
14. Views that oppose the concept of machine-intelligence are extensively presented by Mortimer Taube, *Computers and Common Sense*, New York: McGraw-Hill, 1961. For further material, Hubert L. Dreyfus, *Alchemy and Artificial Intelligence*, Rand Corporation Paper, 1966, page 3244.
15. Marvin Minsky, "Artificial Intelligence," *Scientific American*, Vol. 215, September 1966. The entire issue provides material on the use of computers.
16. Oliver Selfridge and Ulric Neisser, "Pattern Recognition by Machine," *Computers and Thought*, edited by Edward A. Feigenbaum and Julian Feldman, New York: McGraw-Hill, 1963.
17. Marvin Minsky and Seymour Papert, *The Perceptron*, Cambridge: MIT Press, 1969. The book further expands on some of the myths of parallel processing.
18. Such work is being carried out by Anthony Platt, in cooperation with Seymour Papert, Leon Groisser and the author. The research is being conducted in Project MAC's Artificial Intelligence Laboratory under Ford Foundation sponsorship through MIT's Urban Systems Laboratory. The work is one of four experiments directed toward the actual construction of an architecture machine.

A Curriculum Structure

BY JOHN WADE, AIA

In undertaking the preparation of a curriculum for the new School of Architecture at the University of Wisconsin, Milwaukee, there was the need to assure ourselves that the architectural profession was being seen in its wholeness and that the student would be exposed to all of the pertinent aspects of the environmental design professions. In order to accomplish this, we have resorted to several structural devices. We have insured the comprehensive study of our professional field through five policy statements, each discussed in detail in the ensuing sections of this paper, by: **I** Adopting a carefully defined set of educational objectives. **II** Describing explicitly the knowledge and skills areas with which architectural education should be concerned; i.e., describing the range of professional interests. **III** Describing explicitly those particular aspects of the physical object with which the architect is especially concerned; i.e., by displaying for ourselves those assumptions about the world that are basic to architectural education. **IV** Seeing the student role as equivalent in most respects to the professional role and adopting recruiting, grading and student participation policies that accord with such a view. **V** Accepting the educator's role as one aspect of the architect's role, thereby recognizing that we must ourselves participate actively in forming a better environment if we wish our students to so participate.

I Adopting a carefully defined set of educational objectives.

The format proposed for the curriculum is three two-year segments named as follows:

1. Pre-Architecture
2. Architectural Studies
3. Architecture

The format was influenced partly by the general trend toward six-year curricula, partly by the recommendations within the Princeton Report and partly by the structure of the university and state university systems in Wisconsin where, conceivably, 13 separate campuses could provide feed-in to the School of Architecture on the Milwaukee campus at the junior year for the beginning of architectural studies (level two).

The educational objectives for each level of the curriculum specify the expected skills' acquisition, knowledge discovery and attitude development. They are as follow:

Level One

1. The acquisition of a level of competence in verbal and mathematical skills implied by a list of courses which includes elementary calculus, statistics, logic, introduction to computers, advanced English composition and architecture orientation.
2. The discovery of as broad a knowledge of the world as possible by a distribution of courses across the physical sciences, the humanities and fine arts and the social sciences. The discovery by the student of knowledge areas that are of special interest to him.
3. The development of intellectual attitudes.

Level Two

1. The acquisition of skills in visual analysis, visual self-communication, and visual social communication.
2. The discovery of the spectrum of skills and knowledge areas that are comprised by the field of architecture and environmental design, and the development of a common vocabulary based in a commonly shared experience.
3. The development of experimental and activist attitudes that are pertinent to the environmental design fields.

Level Three

1. The acquisition of effectuation and manipulative skills.
2. The discovery of specialized knowledge and skills within a circumscribed range pertinent to the student's own career direction.
3. The further development of professional attitudes to encompass the scientific method and its extension, the systems approach.

It should be noted that other programs in technical subjects and for continuing education will be developed in cooperation with university extension services. We believe, however, that a "technician's" program should be congruent with the program in level two since it is more important for the technician to understand the range of knowledge, skills and attitudes of the professional practitioner than it is for him to acquire specific simplistic skills in drafting or specification preparation. Simplistic skills can be job-acquired where, too often, understanding cannot.

The author: Mr. Wade is newly appointed dean of the School of Architecture, University of Wisconsin, Milwaukee Campus.

Finally, it should be made plain that the curriculum does not, at this time, specify the student performance that is anticipated at each level. One of the major difficulties in the Princeton Report is its lack of flexibility in this area. Faculty members personalize their instruction and students personalize their performance. Even where student performance is precise, skilled and thoughtful, we have no assurance that the student will be a skilled and thoughtful architect some years hence. We have, as yet, no measures that will permit us to predict such things as devotion to a cause, concern for a client's problems, integrity of purpose and insight into a social role. (These are important matters for architectural education and I will discuss them in more detail presently.)

We will expect to develop measures of performance that are enumeratable but we shall approach the task of specifying a range of acceptable performances with caution, recognizing that we are not thereby defining successful and humane architectual practice.

II Describing explicitly the knowledge and skills areas with which architectural education should be concerned; i.e., describing the range of professional interests.

Within architectural education, there has been for some time now (among the more progressive schools) an effort to consider the architect as a generalist; i.e., a person with a broad comprehension of human activities who is able to unite the knowledge and skills of many persons into a single creative effort. This has been an effort noble of intention, but unfruitful of result.

Upon careful consideration of the notions, generalist and specialist, we can be more specific as to our purposes in educating the architect. Generalist and specialist are relative terms, and we must specify the generalist and specialist frames of reference. In order to do so, we need to draw a distinction between skills and knowledge.

For purposes of this discussion, we can describe knowledge as nonactive, but affecting actions, and storable, both in human beings and in nonhuman vessels. We can describe skills as active, and skill abilities, though drawing upon knowledge, as able only to be stored in human beings.

For our purposes we can group skills under three headings — Symbolic (programming), Iconic (design), and Enactive (effectuation). We can group areas of knowledge by the scale of project undertaken and traditionally associated with recognizably distinct environmental disciplines: urban development, site development, building development, interior development, product development and graphic development.

By the use of a matrix array, we can specify generalist and specialist activities and attitudes. We shall let one dimension (axis) of the matrix represent areas of skill, and the other dimension represent areas of knowledge:

	Skills Axis		
	Programming	Design	Effectuation
a. Urban Development	1.a	2.a	3.a
b. Site Development	1.b	2.b	3.b
c. Building Development	1.c	2.c	3.c
d. Interiors Development	1.d	2.d	3.d
e. Product Development	1.e	2.e	3.e
f. Graphic Development	1.f	2.f	3.f

The traditional architectural curriculum centered in area *2.c*, that of architectural design. More recently, curricula that thought of themselves as generalist in scope ranged from *1.c* across to *3.c*. Others calling themselves generalist ranged from *2.a* to *2.c* with a bit of *1.a* or *1.c* thrown in.

In our curriculum at UWM we shall provide in architectural studies (level two) of the curriculum, a broadly generalist setting by ranging across the entire matrix from *1.a* to *3.f* and from *3.a to 1.f*.

In order to cover the matrix we shall move, in general, through the four semesters from: the urban and site scale, to the site and building scale, to the building and interiors scale, to the product and graphic scale.

Furthermore, we shall place emphasis in some problems upon the programming phase, in some upon the design phase and in some upon the effectuation stage, thus covering the symbolic, the iconic and the enactive areas. The arrangement of faculty into three-man teams will further insure that the symbolic, iconic, and enactive areas are fully treated.

Referring again to the matrix array, we can use it to describe the curricula that will be offered in level three. While all curricula will lead to the degree Master of Architecture, we shall expect to offer specializations (with appropriate accompanying generalizations) within the degree program.

In order to aid in carrying out the mission of UWM with its concern for urban involvement, the School of Architecture, upon the initiation of the level three program in the 1971-72 academic year, will expect to offer two standard problem sequences. The first will specialize in building development and will range across the matrix squares *1.c, 2.c,* and *3.c* with some slight spread into the adjacent *b* and *d* squares. The second will specialize in urban development and will range across the matrix squares *1.a, 2.a,* and *3.a* with some spread into the adjacent *b* squares. In succeeding biennia, we shall expect to develop other specializations:

	Skills Axis		
	Programming	Design	Effectuation
Site Development	1.b	2.b	3.b
Interiors Development	1.d	2.d	3.d
Product Development	1.e	2.e	3.e
Graphic Development	1.f	2.f	3.f

It should also be possible to develop specializations in:

	Skills Axis		
	Programming	Design	Effectuation
Programming	1.a	—	1.f
Design	2.a	—	2.f
Effectuation	3.a	—	3.f

The student will be permitted, as his maturity of experience allows, to propose his own curriculum and problem sequences for each semester's work. Upon faculty approval, the student will undertake work in the same manner as in the problem sequences established by the faculty.

III Describing explicitly those particular aspects of the physical object with which the architect is especially concerned; i.e., by displaying for ourselves those assumptions about the world that are basic to architectural education.

Underlying any organized definable human activity is a set of assumptions, very often implicit and unstated, about the nature of that activity. Architecture is such an activity and as practiced today, it is highly organized and definable. Let us make the assumptions underlying its practice today explicit. The basic assumptions are:

First, that bodies of knowledge and experience exist which are essential to the practice of architecture as a professional discipline. Neither the body of knowledge nor the body of experience is very closely defined under present-day practice. It is capable of definition.

Second, that a relationship exists between the world of idea and the world of events. This is to say that we attach meanings to the forms of

physical objects and that those meanings are understandable to other persons within the same cultural context. We assume that relationships between ideas and events can be discovered (communicated to ourselves) and displayed (communicated to others).

Third, that the activity of the architect is purposive or goal-directed. We assume that it is possible to state goals verbally, but that within present technique, *groups* of goals can be defined only by physical proposals for their accomplishment. It follows that goal statements and proposals for their satisfaction are interactive, the one modifying the other until a best fit is achieved. We assume that the world of ideas and the world of events are both manipulatable. We assume that the architect's arena is the socio-physical environment and that his sphere of activity is the proposal of change in that environment.

Fourth, that all things affect each other; that, "all things conspire" to produce the present moment. The architect assumes further that his activity is in discovering a best fit between a group of goals and its physical expression. The architect also assumes that a good portion of this activity is evaluative, critical and decision-oriented.

Finally, when we engage in architectural education, we assume that procedures exist which can be learned that make the practice of architecture an orderly process and a major life orientation.

On the basis then of these assumptions, there appear to be four clearly definable study areas that must be encompassed by a comprehensive curriculum in architecture. Each of these study areas can also be seen as an aspect of the physical object:

Study Area	Aspect of Object
1. visual concepts and materials	relational
2. visual communication	symbolic
3. purpose and form	functional
4. evaluation and decision	affective

The first area deals directly with physical objects and their abstract and spatial relationships and how those relationships are ordered by our concept structures. The second area, communication, deals with a relationship between persons via the physical object and deals with symbolic processes. The third area is concerned with the purposes that human beings impose on objects, arranging the form of the object to serve those purposes; it is also concerned with the manner in which purposes are evoked by form. The final area is concerned with the affective quality of the physical object and the manner in which this quality contributes to evaluative and decision processes. Finally and continuously must come the integration of these study areas into a single design process.

IV Seeing the student role as equivalent in most respects to the professional role and adopting recruiting, grading, and student participation policies that accord with such a view.

In establishing policies for the new School of Architecture, we have tried to bear in mind attitudes expressed today by students everywhere. Relevance and commitment are important considerations for education programs at any time; they are especially so today. It has been our belief that the responsibility of a school faculty and administration is to be in the forefront of contemporary thought assisting students toward their goals; it is our responsibility as a faculty to assist change—not to resist it.

Consonant with these attitudes, our school curriculum provides a broad array of choices for the student. In his first two years of pre-architecture, the student's only required courses are the university-wide requirements of freshman English and history. The student is told, however, that he is responsible for acquiring by his junior year the skills and knowledge implied by a list of recommended courses in mathematics, logic and English composition. This is an unusual policy for our campus and has produced a larger than usual volume of counseling activity—which our faculty has welcomed. Better than any other device, this policy has made the student aware that his future career is his responsibility, and that he must acquire sufficient maturity to make good choices early in his college career.

The student is also warned as a freshman that he will be asked to present to our faculty evidence of his interest in the environment and of his commitment to the field of architecture. His portfolio of evidence must be material that he has produced on his own initiative or evidence of more than casual employment or involvement in several kinds of activities. The portfolio could include one or more of the following items:

1. a collection of drawings, paintings, photographs, or other art work,

2. employment by an engineer, an architect, an urban planning agency, a landscape architect, or employment in the building trades,

3. participation in such programs as the Peace Corps, VISTA, Head Start, or involvement in a civil rights organization, or some other evidence demonstrating civil awareness, community involvement, or advocacy,

4. a protracted essay or research study on some environmental problem or topic,

5. any other evidence demonstrating concern with the environment, interest in the arts, or qualities of self-initiative or thoughtfulness.

By requiring such evidence prior to the student's entry upon architectural studies, we will be selecting students for their interest in the

field and for their initiative in securing career-pertinent experience. By requiring that students choose their own early-year collegiate programs, we are selecting students for maturity and independence of thought. By talking to students, as we have constantly done, about the stringent nature of the program from the junior year onward, we are recruiting only students who will invest heavily of their time in their professional studies, and by talking about the many different career directions in architecture and diagramming the curriculum with an equal emphasis upon programming, design and effectuation skills, we are attempting to de-emphasize the more glamorous design skills whose past emphasis has distorted the student's view of the profession and robbed it of many persons skilled in other areas.

From the time that the student enters the architectural studies program at the junior level, his course will be organized in a new form appropriate to a professional school with a strong central purpose. Since the student will be concerned with design development decisions all his professional life, he will start the practice of decision with his introduction to professional education.

During each semester, each student will be enrolled in a problem-solving course assigned to a value of 12 semester credits. (He will also be enrolled for one free elective course outside the School of Architecture.) The problem-solving course will become the central discipline in his student life, dealing insofar as circumstances permit with real problems. By becoming enrolled in this course, the student accepts responsibility for whatever amount of time is necessary for meetings and instruction from 1 p.m. until 5 p.m. each day Monday through Friday for every week of the semester (calendared holidays excluded). The week will be divided as follows: Mondays, Wednesdays and Fridays for problem assignments and discussion, critique of work, consultation with the faculty problem team, field visits as required and presentations and juries held upon the termination of each problem; Tuesdays and Thursdays for lectures and skills instruction.

Attendance at the lectures and skills instruction will not be required; homework and exercise solution will be encouraged, but not required, and no examinations upon the lectures or instruction will be given. The faculty, however, will expect the students to make full use of the knowledge and skills available from the lecture courses in his problem solutions. The problems will be so arranged, and the student's performance in the sequence of problems will be evaluated in such a manner as to insure a distinction between students who have acquired the knowledge and skills available in the lectures and skills instruction and those who have not. This evaluation system places emphasis, appropriately for an architect, upon the convergent use of knowledge in problem solution, not upon the simple acquisition of unrelated knowledge.

A difficulty in evaluation of student work has been the need to evaluate visual materials upon their presentation by the student. In the past, this was necessitated by the difficulty in storing and handling large drawings and models. Immediate grading placed an undue emphasis upon the visual product and forced a direct comparison between the work of a number of students. With presently available photographic equipment these difficulties can be avoided. We shall expect to microfilm drawings and photograph models or colored material in order to develop a complete file of work accomplished by each student. By this system, the faculty can review all work at two periods in each semester and thereby grade the student's work progression—not his individual projects.

There are variations in the degrees of choice available to the student in different parts of the curriculum. Level one is quite free, level two is relatively fixed, and level three is, again, quite free. Building upon the base of experience gained in level two, the student will be expected to select his own career direction and his own area of specialization (with the help of faculty advice and with faculty approval). Special consideration and encouragement will be given to students desiring to undertake joint degree programs and we hope to see arrangements developed between the School of Architecture and the schools of Applied Science and Engineering, Business Administration, International Studies, and appropriate departments such as Urban Affairs in the School of Letters and Sciences.

The involvement of students in an advisory capacity with regard to the school curriculum, with the appointment of faculty, and with the arrangement of teaching space has already begun to provide dividends for both faculty and students despite the fact that the only course optional (the first full year is to be activated in the fall of 1969) is an orientation course for sophomores. This group of highly motivated students has already formed itself into a student AIA chapter, organized a separate course of visiting lecturers, and impaneled a group of more mature students to advise freshmen and sophomore students in their choice of courses. As we move further into the program, we will expect to achieve a full participation of students in decisions of importance and an adequate representation of students on all committees of the school.

We have moved from the beginning to achieve those goals recently expressed in resolution at this academic year's Student Forum in Ann Ar-

bor, Michigan. We are working toward a broadly interdisciplinary faculty, and we expect to deal in student work with real problems that exist in our community.

V Accepting the educator's role as one aspect of the architect's role, thereby recognizing that we must ourselves participate actively in forming a better environment if we wish our students to so participate.

From this policy statement we may draw two direct implications: First, that the school must choose integrative activities that transcend sharp professional lines rather than divisive activities which draw those lines all the more sharply, and second, that the school must become a service institution as well as an educational institution.

In addition to its teaching functions, the School of Architecture can serve some or all of the following purposes:

- it can serve to advance knowledge in its field through research,
- it can provide a meeting place for those professional disciplines within its purview and for the practitioners of those disciplines and its students,
- it can provide a place for commonly owned library, computer and communications facilities for the school and for practitioners,
- it can supply a goal-setting function for practitioners and for the public and state by having its faculty and students undertake ideal studies or utopian proposals unable to be investigated by the usual architectural firm or public planning agency,
- it can provide through its faculty and students design services for parts of the community not ordinarily served by the design professions—it can provide advocacy services,
- it can provide educational assistance in visual processes to primary and secondary school programs,
- it can provide service courses in visual processes to other schools within the university (see item 6, below),
- it can cooperate in helping to provide continuing education for its graduates and extension services to the public and especially to persons employed in the design professions,
- it can provide a constant challenge to the community to raise its aspirations concerning the quality of its environment.

As the school develops, it is our hope that we will be able to engage, to some degree, in each of the service areas listed above. In order to secure relevancy for our educational program, we have already begun to investigate ways of engaging in such service. We have also begun to reach out to other schools of architecture and other schools on campus in search of integrative activities in which we can participate. We are already participating or are preparing to participate in the following activities:

1. the formation of a studies center for technological development that will eventuate in a graduate program for the generalist-technologist, a person educated to aid in the technological development of underdeveloped areas,
2. a summer program studying community decision processes,
3. a program of student exchange among a consortium of schools of architecture and planning in the Midwestern area,
4. the video-taping of lecture sequences and their distribution to permit all schools within our state university system to serve as feeder schools to the School of Architecture at the University of Wisconsin, Milwaukee,
5. the development of a study center for systems engineering and design methods in cooperation with other schools on our campus,
6. finally, the study of levels one and two of our curriculum as a potential undergraduate curriculum for any of a number of environment-related activist professions. Visual modes of thought are not, of course, the exclusive province of the architect; the architect's advantage in this area is that he has (despite the imperfection of his methods) made conscious use of visual systems to help in solving complex design problems. It might well be that by defining visual modes of thought as we have done under III, above, and structuring an undergraduate curriculum around them, these powerful tools might become more appropriately available to persons entering other professions.

By the expansion of each of these policy statements into detailed structures, we have hoped to insure our students of a comprehensive exposure to the design professions. I have purposely omitted any detailed listing of lecture sequence, although such sequences have been established in some detail and tentative assignments made to those faculty members who have so far been appointed for next year. If the curriculum is approved in its proposed form, one of the virtues not noted above is the fact that lecture and instructional sequences are not formalized as courses within the curriculum. Such lecture and instruction sequences can be changed readily from year to year as needs change, as experience indicates, and as student performances warrants. Such a relatively informal structure has many virtues for education for a changing profession. □

With the present ACSA section, Donlyn Lyndon's term as editor is up. Philip Dole, associate professor, School of Architecture and Allied Arts, University of Oregon, Eugene, Oregon, will take over the duties beginning with the May issue.

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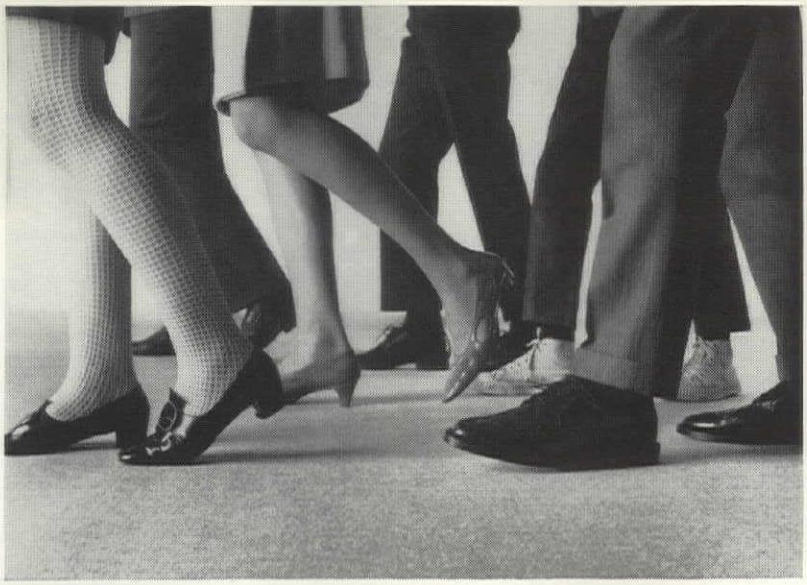

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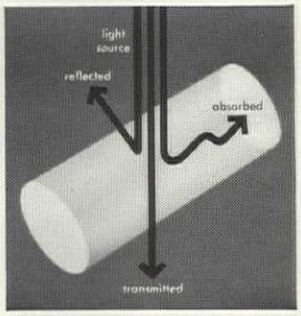

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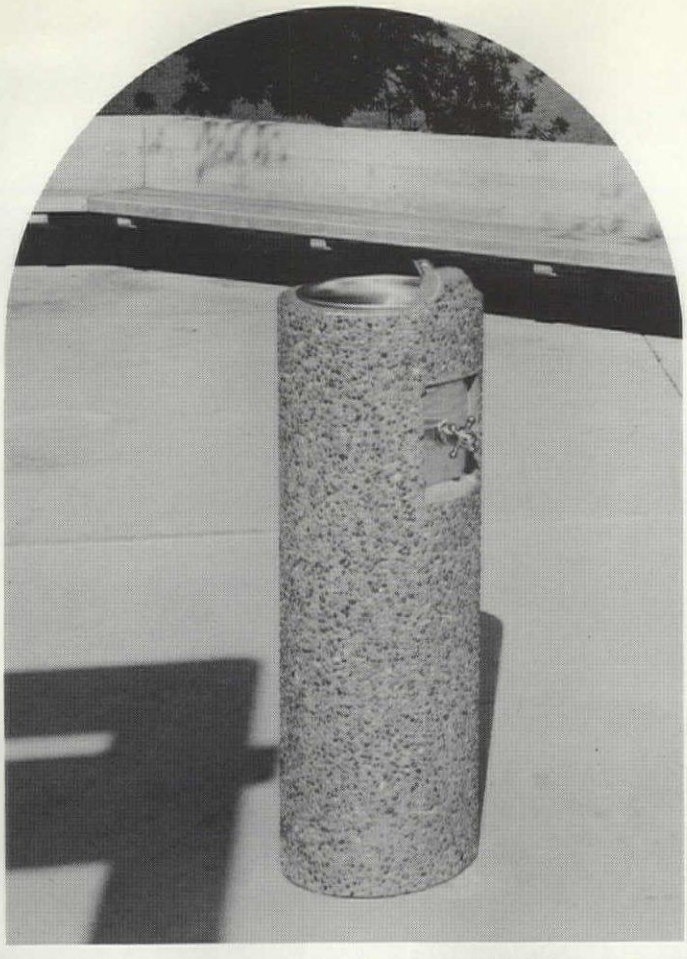

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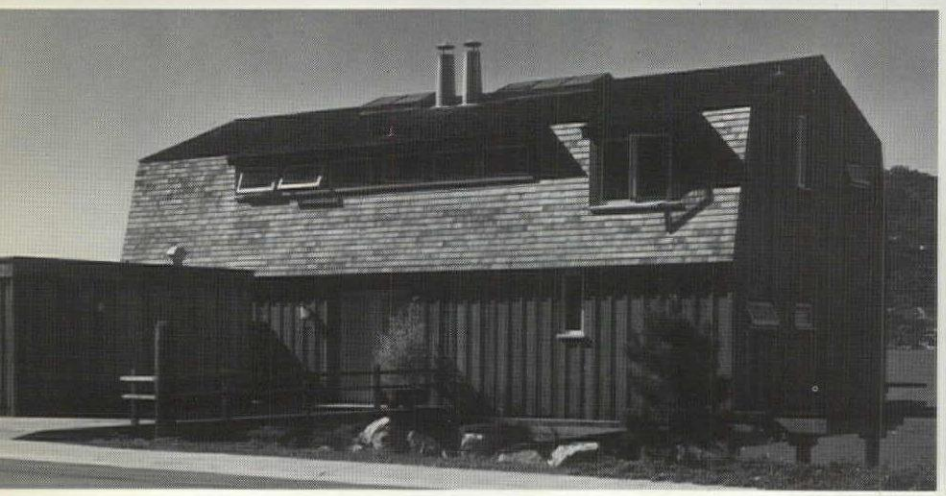

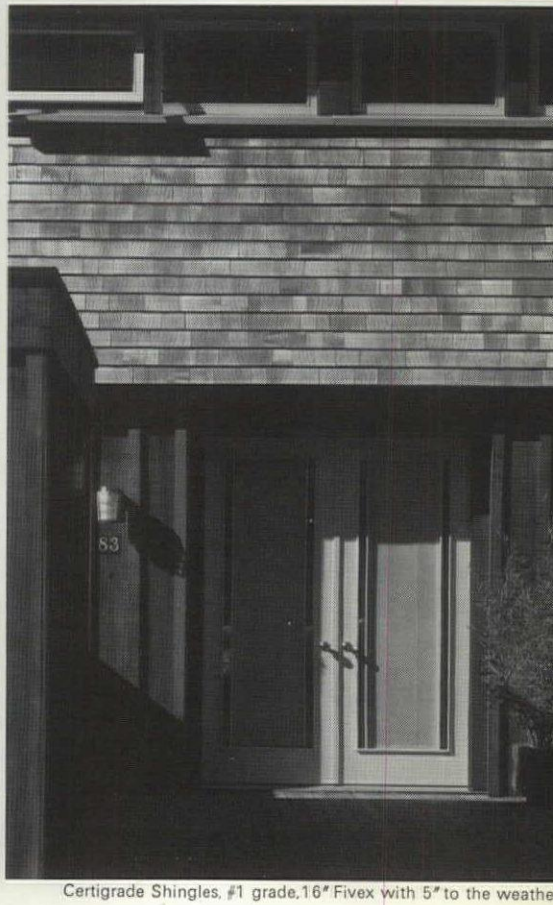

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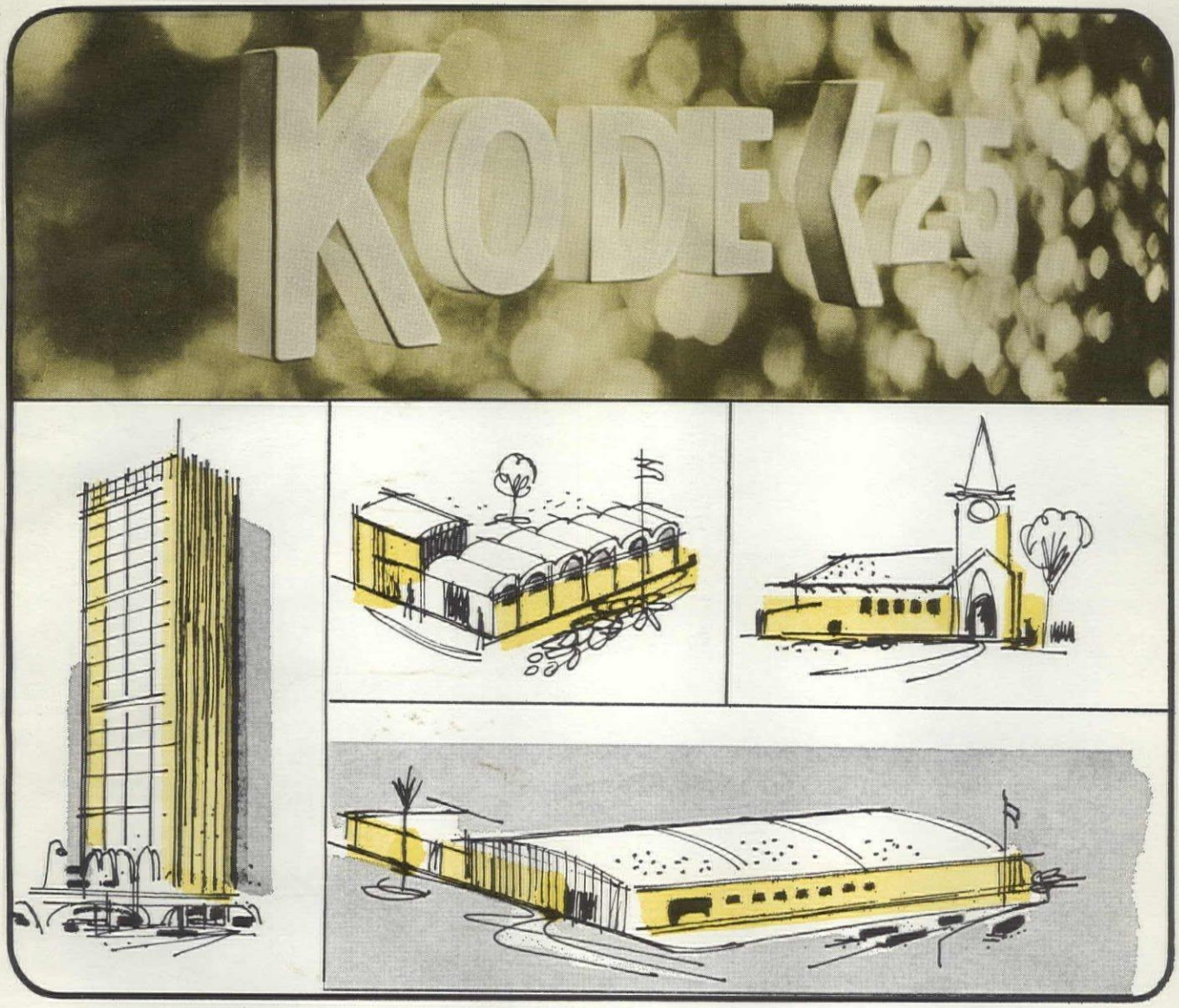

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Books

Art in Architecture. Louis G. Redstone, FAIA. New York: McGraw-Hill, 1968. 256 pp. $19.95.

No architect who pretends to aspire to the creation of more than just shelter can afford to be without this splendidly documented plea for cooperation between architect and artist. Basically a picture book, it contains nearly 500 photographs depicting the use of sculpture, painting and mosaics in an architectural setting, some of which were reproduced in the AIA JOURNAL for May 1968. Even a cursory glance will stimulate the imagination and open the eyes to an infinite vista of possibilities, as yet, little explored.

So far as the general theme and arrangement is concerned, Redstone has paid Paul Damaz the compliment of imitation. He would appear to owe a good deal to this forerunner but has outstripped him in as much as his book is better presented. It is larger, the stock of excellent quality and the photographs, many of them Redstone's own, are reproduced with superb clarity. It is well indexed, and a few words on artist contracts are thoughtfully included.

Before taking us on a world tour, the author devotes two-thirds of his book to the United States. The categories into which this section is divided enable one to make interesting comparisons. For instance, the poverty of examples and their indifferent quality in the chapters on shopping centers and churches compared to those on banks, educational and federal buildings gives a clear picture of the need for adequate spending. That this spending must be well guided and the client educated to its necessity is of paramount importance.

A deeper study of the book reveals most clearly the need for closer and earlier communion between the architect and the artist. Although Redstone makes no such comparison, a glance at the blending of Constantino Nivola's sculpture with Eero Saarinen's dormitories at Yale University, on page 3 and, on the next page, Bassetti & Morse's Humanities Building, Western Washington State College, with totally unrelated sculpture, bring the point home. Generally speaking, the sculptors seem to come off better than the painters, though both have a great deal to learn from our Latin neighbors who seem able to avoid such clashes as that shown on page 110 where slender stair rails cut the space between viewer and heavily sculptured concrete panels or the horrible confusion created by an abstract mural in the Dag Hammarskjold Library at the United Nations, page 137. Another mural, disturbing to the architecture, is shown on page 144. Equally disturbing examples are shown of buildings in which the architect has dreamed of himself as the sculptor and tried to amalgamate the roles! See Andre Bloc's and Frederick J. Kiesler's contortions on pages 202 and 187, respectively.

Although there are examples of most happy marriages of art and architecture where the two creators have worked quite separately on their creations, such as at the General Motors Technical Center at Warren, Michigan, on page 104, it is evident that far too often the art work is either out of scale or out of harmony with the building. Alternatively, it is frequently uninviting to the viewer. And this brings us to another consideration.

Continued on page 92

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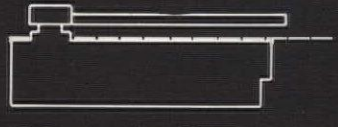

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Books *from page 92*

More Houses for Good Living. Royal Barry Wills Associates. New York: Architectural Book Publishing Co., 1968. 128 pp. $7.95.

Royal Barry Wills was the author of eight books before his death in 1962. He became famous for his ability to adapt the New England house of colonial days to 20th century living, and variations of his designs may be seen spread throughout the United States. His books, particularly *Houses for Good Living* and *Better Homes for Budgeteers* are avidly thumbed and studied by the prospective home owner who has traditional tendencies where houses are concerned.

The firm is now headed by Robert E. Minot, Warren J. Rhoter and Richard Wills, and it has broadened its field. The present volume, however, is testimony to the fact that the firm carries on the basic philosophical tenets of Royal Barry Wills. The brief text accompanies 125 photographs and 60 drawings.

Apartment Communities, The Next Big Market: A Survey of Who Rents and Why. Carl Norcross and John Hysom. Washington: Urban Land Institute, 1968. 83 pp. $6.

The term garden apartment community is used in this publication to define one-, two- or three-story buildings without elevators set within enough space to give "some feeling of garden." There have been apartment developments for a long time, write the authors, but the new apartment community is different.

Such a community usually has amenities like a pool and clubhouse and other facilities and services shared with other residents. The new apartment community is likely to be larger since it has been demonstrated that if there are under 200 units the amenities cannot be afforded.

The Urban Land Institute wanted to know how these apartment communities were succeeding, and it joined with the P. C. Nichols Co. of Kansas City to study four projects in that city. The results of the study are given in this publication. All apartment owners want long-term renters since they are the most profitable. This study emphasizes anew that better designed apartments of quality construction, with amenities, will attract and hold a more stable class of tenants. Such apartments will be a better long-term investment than others. "The lesson learned from Kansas City," conclude Norcross and Hysom, "is that there is a new market for well-planned apartment communities."

Principles of Construction Management for Engineers and Managers. Roy Pilcher. New York: McGraw-Hill, 1966. 382 pp. $16.50.

Pilcher, senior lecturer in construction management at Loughborough University of Technology in England, believes that a knowledge of management principles judiciously applied can effectively increase productivity in construction work. He presents what he considers the basic tools and subjects with the thought that others can be added if one thoroughly understands the subject matter of this book.

He discusses engineering economics, the utilization of mechanical equipment, planning for construction, cost control and operational research and construction. The book is from the British point of view, of course, but the fundamental principles Pilcher enunciates are universal. □

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National

Mar. 17-20: United States Institute for Theatre Technology Annual Conference, Hollywood Roosevelt Hotel, Los Angeles

Mar. 19-20: AIA-Consulting Engineers Council National Legislative Conference, Mayflower Hotel, Washington, D.C.

Apr. 29-May 1: National Conference on Religious Architecture, Chase-Park Plaza Hotel, St. Louis

June 22-26: AIA/RAIC Annual Convention, Palmer House, Chicago

AIA Regional and State Conventions

Mar. 19-21: Michigan Society of Architects, Statler Hilton Hotel, Detroit

Apr. 24-26: Gulf States Region, Jefferson Davis Hotel, Montgomery, Ala.

May 7-9: North Central States Region, Lake Lawn Lodge, Delavan, Wis.

Continuing Education

Mar. 13: Applications due, Rotch Travelling Scholarship, a $7,000 stipend for study and travel. Contact: Walter E. Campbell, Secretary, Rotch Travelling Scholarship Committee, 100 Boylston St., Boston, Mass. 02116

Apr. 15: Applications due, Kate Neal Kinley Memorial Fellowship, a $2,400 stipend for advanced study in the fine arts. Contact: Dean Allen S. Weller, College of Fine and Applied Arts, 110 Architecture Bldg., University of Illinois, Urbana, Ill. 61801.

May 15: Registration due, architectural history course at University of Salamanca, Spain. Contact: School of Architecture, University of Virginia, Charlottesville, Va.

July 1-22: National Trust (British) Summer School devoted to study of historic houses, Attingham Park near Shrewsbury, Shropshire. Contact: American Friends of Attingham, Inc., 41 E. 65th St., New York, N.Y. 10021.

Awards Programs

Apr. 1: Entry blanks due, Guild for Religious Architecture exhibition (all entries accepted for hanging if space permits; otherwise, selection made on basis of when received). Contact: Theodor M. Hoener, Chairman, Architectural Exhibits Committee, 4227 Watson Road, St. Louis, Mo. 63109.

May 16: Applications due, Western Home Awards program. Contact: AIA-*Sunset Magazine* Western Home Awards Committee, Box 2345, Menlo Park, Calif. 94025.

July 1: Submissions due, commercial/industrial interiors in seven categories. Contact: Contract '69, National Expositions Co., 14 W. 40th St., New York, N.Y. 10018.

Tours

Apr. 20: Architectural Tour of Japan and Hong Kong, 21 days. Led by Harrison Overturf, FAIA. Contact: John V. Delp, Architectural Study in the Orient, Box 334, Tacoma, Wash. 98401.

June-August: Special travel programs departing from New York, for AIA members. Contact: Travel Wholesalers International, 1707 L St., N.W., Washington, D.C. 20036. □

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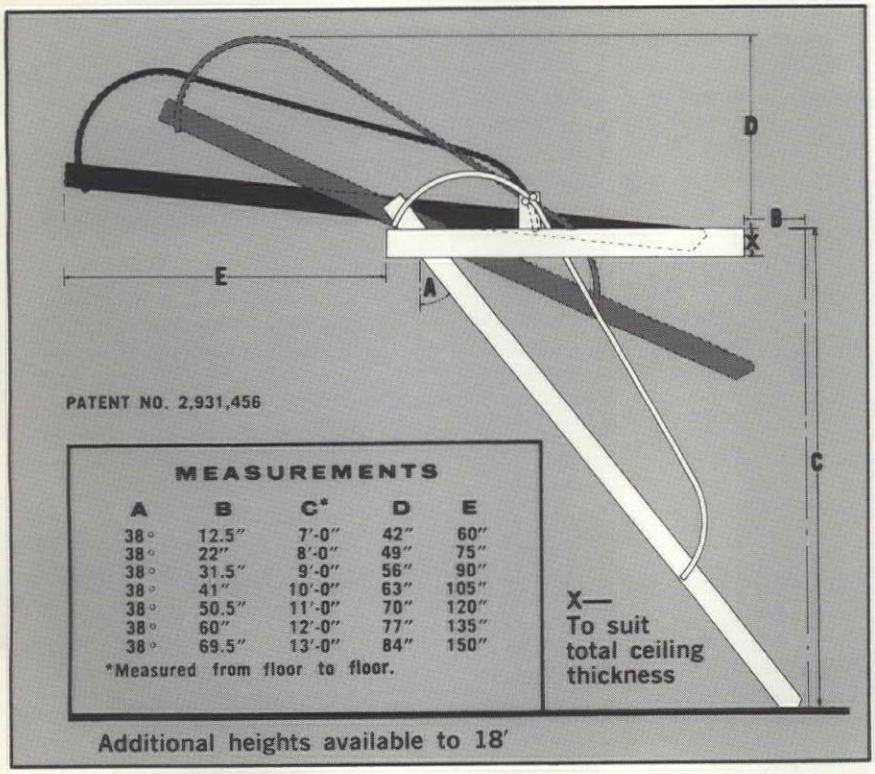

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Letters

Concerning Codes

EDITOR:

Your January issue was full of very timely articles. The one by David M. Pellish on "A New Approach to Code Problems" fits beautifully into our local chapter efforts (as a first step in code improvements) to get the City of Akron to adopt the Ohio State Building Code.

Therefore, I would like 50 reprints of Mr. Pellish's fine article for distribution to members of our Code Committee, the City Council, the Building Department, etc.

STEWART A. ROBERTS, AIA
Akron, Ohio

ED. NOTE: Each month selected articles are reprinted and listed on the information card, as was the case in Mr. Pellish's piece (single copies free). Readers interested in quantity prices of such reprints or of others which they would like to order may circle No. 36 on the information card.

Computer Programmers Take Note

EDITOR:

As my role in a research project sponsored by the National Institutes of Health, I am collecting data on existing computer programs relating to all aspects of architectural design.

I need the following information from programmers: program name, programmer, sponsor, description, program limitations, machine specifications, availability and references. In addition, a copy of the computer output must accompany each program submission.

The result of this project, on which I am collaborating with Sim Van der Ryn of the University of California, will be a book of our findings to be published in 1970.

Inquiries should be directed to me at the Laboratory for Computer Graphics and Spatial Analysis, Graduate School of Design, Harvard University, Cambridge, Mass. 02138.

ERIC TEICHOLZ
Cambridge, Mass.

Where's Professor Higgins?

EDITOR:

Now that the AIA and the AGC have been able to agree on a number of other things, wouldn't it be a blessing if they would agree on the pronunciation of the word "contractor?"

Without setting up as an authority, along with TV vice presidents, recent immigrants from Austria, poll takers, professors of philosophy and other enemies of traditional usage, I think my ears tell me that most Americans, including most contractors, say CON-tractor. It is true that British authorities prefer, or used to prefer, con-TRAC-tor; but until the first World War, most Americans paid little attention to British preferences, and it was not until after that war that people became self-conscious about the word.

And because the next-to-the-last edition of Merriam-Webster gave con-TRAC-tor as the first and supposedly the better pronunciation and seemed to downgrade CON-tractor by marking it "US," an astonishing number of architects fell dutifully into line. Since then, they have been correcting both contractors and clients, with occasionally awkward results.

Why should we fight what the late H. W. Fowler of *Modern English Usage* described as the natural tendency of English pronunciation: the tendency for the accent to shift toward the first syllable? And why should architects, who are not under the thumb of TV vice presidents, fight contractors and clients about pronunciation when they have better things to fight.

WILLIAM E. WILLNER, AIA
Atlanta, Ga.

Information Exchange

EDITOR:

I would welcome correspondence with one of your younger architect readers as a means of continuing education.

Periodically, one comes across an architect (local graduate) who has had the opportunity of furthering his studies in the states. Needless to say, I envy them. Financially, as far as I am concerned, this is quite out of the question.

Without an overseas tour it might be difficult but with correspondence this might be possible. At least it's worth a try.

JAC ROMAIN
Office of the City Architect
Germiston, Republic of South Africa

Who's on First?

EDITOR:

I always enjoy the AIA JOURNAL. However, illustrations are not always keyed to the text. In the January issue, for example, there is no way of telling who is who and what is where.

EUGENE HENRY KLABER, FAIA
Quakertown, Pa.

ED. NOTE: We agree with Mr. Klaber's general principle, but felt such specific identifications were not necessary in the coverage of the Panamerican Congress where the photos were used to help create the flavor of Bogota and the sessions.

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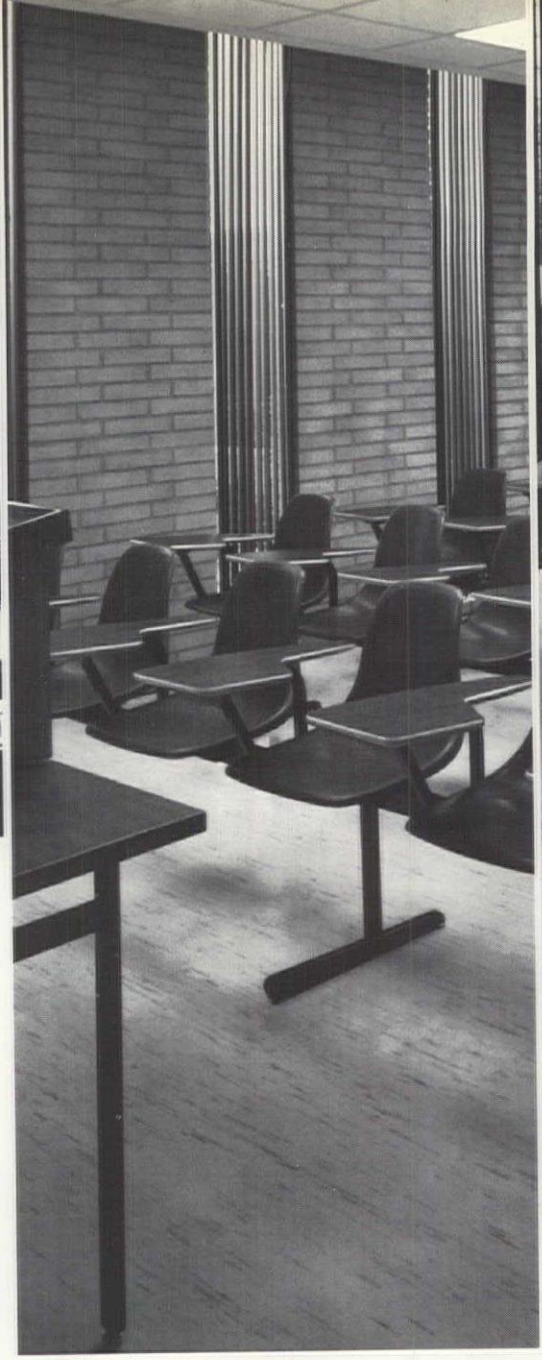
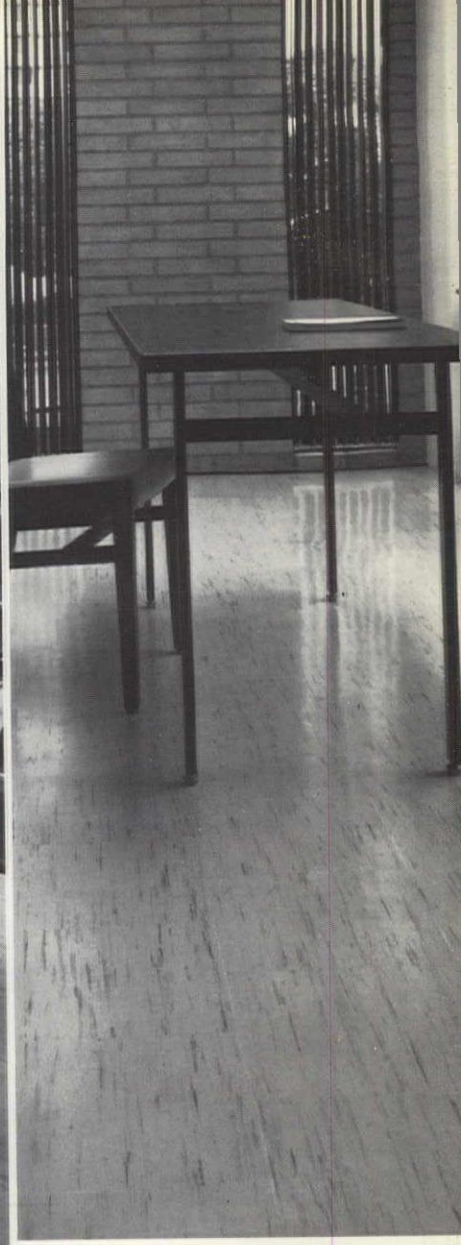
The gleaming 12-story Waite Phillips Hall in Los Angeles houses all primary activities of the USC School of Education, the largest in the West and one of the oldest in the nation. **Architect:** Edward Durell Stone, Los Angeles. **General Contractor:** Collins & McPherson, Los Angeles. **Flooring Contractor:** Tri-Way Contractors, Los Angeles.

The choice of flooring for this new campus building was based on a simple and obvious goal. Practicality. Hence, carpet was limited to executive offices, library, and special-purpose rooms. In classrooms, general offices, corridors, and stairways—more than two-thirds of the total floor area—Armstrong Excelon Vinyl-Asbestos Tile was used. Specifically, over 56,000 sq. ft. of 3/32" gauge, 12" x 12" Standard Excelon. Its tight-mottled graining disguises the scuffs left by students' footwork. Practical, and then some. Because Standard Excelon is a handsome addition to the grace and beauty of this modern building.



The use of a single Excelon pattern and color throughout the USC installation achieves a pleasing unity of design. And since the graining of the tile runs in one direction, the floor appears seamless. Something else about the graining. It goes all the way through the tile, so it won't fade away or show traffic lanes.



In any building you design, commercial or institutional, there's always the budget to think of. Standard Excelon Tile looks expensive, but it's budget-priced. It may or may not be the right floor for the style and function of your next project. If it isn't, Armstrong offers you a choice of 16 other different kinds of floors for contract interiors.

The floor plan of a campus

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